User's Manual

YS1000 Series

YS1350 Manual Setter for SV Setting
YS1360 Manual Setter for MV Setting
Operation Guide

Functional Enhancement

IM 01B08E02-01EN

vigilantplant®

YOKOGAWA
Yokogawa Electric Corporation

IM 01B08E02-01EN
1st Edition

Product Registration

Thank you for purchasing YOKOGAWA products.
YOKOGAWA provides registered users with a variety of information and services.
Please allow us to serve you best by completing the product registration form accessible from our homepage.
http://www.yokogawa.com/ns/reg/

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YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting
User's Manual (Electronic version)
Chapter 1 Input/Output and Auxiliary Function
Chapter 2 Display and Security Functions
Chapter 3 Adjusting Direct Inputs (Temperature/Resistance/ Frequency)
Chapter 4 Processing during Power Failures
Chapter 5 Maintenance
Chapter 6 Specifications

YSS1000 Setting Software for YS1000 Series/ YS1700 Programmable Function
User's Manual (Electronic version)
Chapter 1 Overview
Chapter 2 YSS1000 Operation Guide
Chapter 3 User Program Creation Guide
Chapter 4 Operation of Computation and Control Programs
Chapter 5 Basic Usage of Control Modules
Chapter 6 Applied Usage of Control Modules
Chapter 7 Operations and Application of Computation Module (Instructions)
Chapter 8 Using Peer-to-peer Communication
Chapter 9 Maintenance
Chapter 10 Sample Program
Chapter 11 Worksheets / Program Sheets / Parameter Sheets
Chapter 12 List of Text Program Instructions

YS1000 Series Communication Interface
User's Manual (Electronic version)
Chapter 1 Overview
Chapter 2 Setting Communication Functions
Chapter 3 Description of RS-485 Communication (Optional Code: /A31)
Chapter 4 Description of Ethernet Communication (Modbus/TCP) (Optional Code: /A34)
Chapter 5 Description of DCS-LCS Communication (Optional Code: /A32)
Chapter 6 Functions and Application of YS1500/YS1700 D-registers
Chapter 7 Functions and Application of YS1310/YS1350/YS1360 D-registers
Appendix ASCII Code Table

YS1000 Series Replacement Manual (Electronic version)
Chapter 1 Overview
Chapter 2 Replacement with YS100-compatible Type
Chapter 3 Replacement with YS80 Internal Unit-compatible Type and EBS, I, EK, or HOMAC-compatible Type
Chapter 4 Replacement with YS80-compatible Type
Chapter 5 Replacement with 100 Line-compatible Type

Foreword

Thank you for purchasing the YS1000 series single-loop controller (hereinafter referred to as “YS1000”).
This manual describes the basic functions and operation methods of the YS1350/YS1360. Please read though this user’s manual carefully before using the product.
Note that the manuals for the YS1350/YS1360 comprise the following five documents:

●Printed manual

Manual Name	Manual Number
YS1350/YS1360 Operation Guide This manual describes the basic operation methods.	IM 01B08E02-01EN
Precautions on the Use of the YS1000 Series This manual is always delivered even if ‘without manuals’ was selected.	IM 01B08B02-91EN

●Electronic manuals

Manual Name	Manual Number
YS1350/YS1360 Operation Guide This is identical to the printed manual.	IM 01B08E02-01EN
YS1350/YS1360 User’s Manual This manual describes the detailed functions and setting items. It does not contain the communication functions.	IM 01B08E02-02EN
YS1000 Series Communication Interface User’s Manual This manual describes how to use YS1000 in Ethernet, serial, and DCS-LCS communications.	IM 01B08J02-01EN
YSS1000 Setting Software/YS1700 Programmable Function User’s Manual This manual describes how to use YSS1000 and YS1700’s programmable function.	IM 01B08K02-02EN
YS1000 Series Replacement Manual This manual describes the compatibility of installation and wiring with YS100, YS80, EBS, I, EK, HOMAC, and 100 line.	IM 01B08H02-01EN
Precautions on the Use of the YS1000 Series This manual is always delivered even if ‘without manuals’ was selected.	IM 01B08B02-91EN

User’s manuals for YS1000 are available on the following web site:
www.yokogawa.com/ns/ys/im/
You need Adobe Reader 7.0 or later (but the latest version is recommended) installed on the computer in order to open and read the manuals.
The printed versions of the electronic manuals are available for purchase. Contact your nearest YOKOGAWA dealer for details.

- **General Specifications**

General Specification Name	GS Number
YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting	GS 01B08E02-01EN

* The last two characters of the manual number and general specification number indicate the language in which the manual is written.

Notice

- The contents of this manual are subject to change without notice as a result of continuing improvements to the instrument’s performance and functions.
- Every effort has been made to ensure accuracy in the preparation of this manual. Should any errors or omissions come to your attention, however, please inform YOKOGAWA Electric’s sales office or sales representative.
- Under no circumstances may the contents of this manual, in part or in whole, be transcribed or copied without our permission.

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- We do not use the TM or ® mark to indicate these trademarks or registered trademarks in this user's manual.
- All other product names mentioned in this user's manual are trademarks or registered trademarks of their respective companies.

Authorised Representative in the EEA

Yokogawa Europe BV. (Address: Euroweg 2, 3825 HD Amersfoort, The Netherlands) is the Authorised Representative of Yokogawa Electric Corporation for this Product in the EEA.

Revisions

1st Edition: June 2014

Safety Precautions

The following contents are for the suffix codes "-□0□", and "-□2□."
This instrument is a product of Installation Category II, of IEC/EN61010-1 Safety Standards and Class A (use in commercial and industrial areas) of EN61326-1 (EMC Standards) (use a ferrite core and an arrester to comply with the standards).

CAUTION

This instrument is a class A product (use in commercial and industrial areas). In a domestic environment this product may cause radio interference in which case the user needs to take adequate measures.

The instrument is a product rated Measurement Category O (other).
* Measurement Category O (other)
This category applies to electric equipment that measures a circuit connected to a low-voltage facility and receives power from stationary equipment such as electric switchboards.
To use the instrument properly and safely, observe the safety precautions described in this user’s manual when operating it. Use of the instrument in a manner not prescribed herein may compromise protection features inherent in the device. We assume no liability for or warranty on a fault caused by users’ failure to observe these instructions.
This instrument is designed to be used within the scope of Measurement Category O (other) and is dedicated for indoor use.
This instrument is an FM Non-incendive or CSA Non-incendive Standard certified product. (To be approved)
FM Standards FM3611
Locations: Class I, Division 2, Groups A, B, C, and D
Class I, Zone 2, Groups II C
Temperature code: T4
CSA nonincendive C22.2 No. 213-M1987
Locations: Class I, Division 2, Groups A, B, C, and D
Temperature Code T4

■ Notes on the User’s Manual

- This user’s manual should be readily accessible to the end users so it can be referred to easily. It should be kept in a safe place.
- Read the information contained in this manual thoroughly before operating the product.
- The purpose of this user's manual is not to warrant that the product is well suited to any particular purpose, but rather to describe the functional details of the product.

1st Edition : Jun. 2014 YK
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■ **Safety, Protection, and Modification of the Product**

The following symbols are used in the product and user's manuals to indicate safety precautions:

"Handle with Care" (This symbol is attached to the part(s) of the product to indicate that the user's manual should be referred to in order to protect the operator and the instrument from harm.)

Protective grounding terminal

Functional grounding terminal (Do not use this terminal as a protective grounding terminal.)

Alternating current

Direct current

- In order to protect the system controlled by this product and the product itself, and to ensure safe operation, observe the safety precautions described in this user's manual. Use of the instrument in a manner not prescribed herein may compromise the product's functions and the protection features inherent in the device. We assume no liability for safety, or responsibility for the product's quality, performance or functionality should users fail to observe these instructions when operating the product.
- Installation of protection and/or safety circuits with respect to a lightning protector; protective equipment for the system controlled by the product and the product itself; foolproof or failsafe design of a process or line using the system controlled by the product or the product itself; and/or the design and installation of other protective and safety circuits are to be appropriately implemented as the customer deems necessary.
- Be sure to use the spare parts approved by YOKOGAWA when replacing parts or consumables.
- This product is not designed or manufactured to be used in critical applications that directly affect or threaten human lives. Such applications include nuclear power equipment, devices using radioactivity, railway facilities, aviation equipment, air navigation facilities, aviation facilities, and medical equipment. If so used, it is the user's responsibility to include in the system additional equipment and devices that ensure personnel safety.
- Modification of the product is strictly prohibited.

WARNING

- **Power Supply**
  Ensure that the instrument's supply voltage matches the voltage of the power supply before turning ON the power.
- **Protective Grounding**
  To prevent electric shock, always confirm that protective grounding is connected before turning ON the instrument's power supply.
- **Necessity of Protective Grounding**
  Do not cut off the internal or external protective grounding wire or disconnect the wiring of the protective grounding terminal. Doing so renders the protective functions of the instrument invalid and poses a potential shock hazard.
- **Defects in Protective Functions**
  If protective functions such as grounding are suspected to be defective, do not operate the instrument. Ensure that all protective functions are in working order before operating the instrument.
- **Do Not Use in an Explosive Atmosphere**
  Do not operate the instrument in locations with combustible or explosive gases or steam. Operation in such environments constitutes an extreme safety hazard. Use of the instrument in environments with high concentrations of corrosive gas (H_2S, SOx, etc.) for extended periods of time may cause a failure.
- **Do Not Remove Internal Unit**
  The internal unit should not be removed by anyone other than YOKOGAWA's service personnel. There are dangerous high voltage parts inside.
- **External Connection**
  Ensure that protective grounding is connected before connecting the instrument to the device under measurement or to an external control circuit.
- **Damage to the Protective Construction**
  Operation of the instrument in a manner not specified in this user's manual may damage its protective construction.

■ **Warning and Disclaimer**

- YOKOGAWA makes no warranties regarding the product except those stated in the WARRANTY that is provided separately.
- The product is provided on an "as is" basis. YOKOGAWA assumes no liability to any person or entity for any loss or damage, direct or indirect, arising from the use of the product or from any unpredictable defect of the product.

■ **Notes on Software**

- YOKOGAWA makes no warranties, either expressed or implied, with respect to the software's merchantability or suitability for any particular purpose, except as specified in the terms of the separately provided warranty.
- This software may be used on one specific machine only.
- To use the software on another machine, the software must be purchased again separately.
- It is strictly prohibited to reproduce the product except for backup purposes.
- Store the software CD-ROM (the original medium) in a safe place.
- All reverse-engineering operations, such as reverse compilation or the reverse assembly of the product are strictly prohibited.
- No part of the product's software may be transferred, converted, or sublet for use by any third party, without prior written consent from YOKOGAWA.

Handling Precautions for the Main Unit

- The instrument comprises many plastic components. To clean it, wipe it with a soft, dry cloth. Do not use organic solvents such as benzene or thinner for cleaning, as discoloration or deformation may result.
- Keep electrically charged objects away from the signal terminals. Not doing so may cause the instrument to fail.
- Do not apply volatile chemicals to the display area, operation keys, etc. Do not leave the instrument in contact with rubber or PVC products for extended periods. Doing so may result in failure.
- If the equipment emits smoke or abnormal smells or makes unusual noises, turn OFF the instrument's power switch immediately and unplug the device. In such an event, contact your sales representative.

Waste Electrical and Electronic Equipment (WEEE), (This directive is only valid in the EU)

Foreword

This is an explanation of how to dispose of this product based on Waste Electrical and Electronic Equipment (WEEE). This directive is only valid in the EU.

Marking

This product complies with the WEEE Directive marking requirement.
This marking indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category

With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a "Monitoring and Control instrumentation" product.
Do not dispose in domestic household waste.
When disposing products in the EU, contact your local Yokogawa Europe B. V. office.

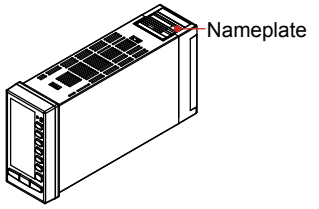
Checking the Contents of the Package

Unpack the box and check the contents before using the product. If the product is different from that which you have ordered, if any parts or accessories are missing, or if the product appears to be damaged, contact your sales representative.

YS1350/YS1360 Main Unit

The YS1350 and YS1360 main units have nameplates affixed to the tops of the terminals.

Check the model and suffix codes inscribed on the nameplate to confirm that the product received is that which was ordered.



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No. (Instrument number)

When contacting your sales representative, inform them of this number too.

Model and Suffix Codes

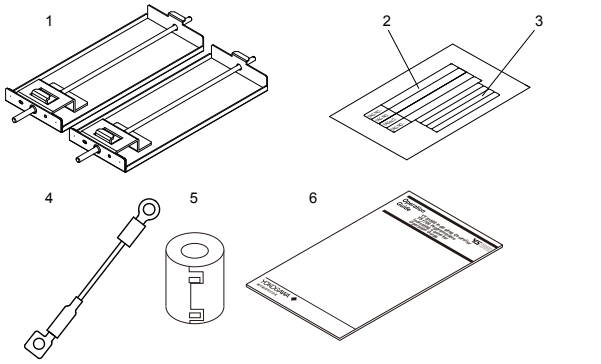
Model	Suffix Code	Optional Code	Remarks
YS1350			Manual Setter for SV Setting
YS1360			Manual Setter for MV Setting
Use	-1		YS1350: Always "-1" YS1360: With hard manual unit
	-2		YS1360 only: Without hard manual unit
Type	0		Basic type
	2		Compatible type for YS100 (with YS100 case)
	3		Compatible type for YS80 internal unit/ compatible type for EBS, I, EK, and HOMAC (*1)
	4		Compatible type for YS80 (compatible size for YS80 with YS100 terminal)
	5		Compatible type for pneumatic 100 line (with YS100 terminal) (*2)
Power supply	0		100 V AC, 24 V DC common power
	1		220 V AC power
Direct input (*3)		/A01	mV input
		/A02	Thermocouple input
		/A03	RTD input
		/A04	Potentiometer input
		/A05	Isolator
		/A06	Two-wire transmitter input (isolated)
		/A07	Two-wire transmitter input (non-isolated)
		/A08	Frequency input
		/DF	Direct input with Fahrenheit temperature function (*4)
Communication		/A31	RS-485 communication (PC-link, Modbus, and YS protocol communication) (*5)
		/A32	DCS-LCS communication (*6)
		/A34	Ethernet communication (Modbus/ TCP) (*7)
Certification		/FM	FM nonincendive approved (FM Class I, Div 2) (*8) (To be approved)
		/CSA	CSA nonincendive approved (CSA Class I, Div 2) (*9) (To be approved)

*1 This type can be connected to the YS80 housing (model SHUP). (The EK/HOMAC-compatible housing (SHUP-420) and EBS/I series-compatible housing (SHUP-100) are sold separately.)
*2 The 100 line-compatible housing (model YS006) is sold separately.
*3 Direct input options can be combined only with suffix codes "-□2□," "-□4□," or "-□5□." Selection of multiple options is not possible.
*4 Optional code /DF can be combined only with optional code /A02 or /A03.
*5 A combination with suffix code "-□3□" is not possible. Optional codes /A31 and /A32 cannot be simultaneously specified.
*6 Optional codes /A31 and /A32 cannot be simultaneously specified.
*7 Optional codes /A34 can be specified only for suffix codes "-□0□".
*8 Optional code /FM can be combined only with suffix codes "-□0□".
*9 Optional code /CSA can be combined only with suffix codes "-□0□," "-□2□".

For the installation and wiring of YS1350/YS1360-□2□, -□3□, -□4□, or -□5□, see the YS1000 Series Replacement Manual.

Accessories

The product is provided with the following accessories according to the model and suffix codes (see the table below). Check that none of them are missing or damaged.



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No.	Item Name	Part Number/ Model	Q'ty	Remarks
1	Metal clamps	L4041RA	2	For YS13x0-□0□
		E9760RJ	2	For YS13x0-□2□
		E9760RN	2	
		E9760RJ	1	For YS13x0-□4□
		E9760RP	1	
2	Tag plate seals	L4041UA	4	50 × 3.5 mm
3	Range entry seals		4	34 × 2 mm
4	RJC sensor	L3501RA	1	Supplied with products with optional code /A02. (*1)
5	Ferrite core	A1179MN	1	For direct input cable (Supplied with products with optional code /A0□.)
6	YS1350/YS1360 Operation Guide	–	1	This user's manual, A4 size

*1: For the RJC mounting, see the chapter "Installation and Wiring" in this manual or the YS1000 Series Replacement Manual.

Accessories (sold separately)

The following lists accessories that are sold separately. When ordered, check that none of them are missing or damaged. To inquire about the accessories or about how to place an order, contact your sales representative.

No.	Item Name	Model	Sales Unit	Remarks
1	120 Ω terminating resistor (*1)	YS020	1	For RS-485 communication
2	250 Ω shunt resistor	YS021	1	For a built-in 24 V transmitter power supply

*1 The instrument has a built-in terminating resistor, which can be selected for use by setting the relevant parameter. If a terminating resistor is used in another device at the termination of the same communication system, an external terminating resistor needs to be provided to match the terminating resistance of the YS1000's built-in terminating resistor.

Symbols Used in This Manual

This symbol is used on the instrument. It indicates the possibility of injury to the user or damage to the instrument, and signifies that the user must refer to the user's manual for special instructions. The same symbol is used in the user's manual on pages that the user needs to refer to, together with the term "WARNING" or "CAUTION."

WARNING

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and indicates precautions that should be taken to prevent such occurrences.

CAUTION

Calls attention to actions or conditions that could cause injury to the user or damage to the instrument or property and indicates precautions that should be taken to prevent such occurrences.

Note

Identifies important information required to operate the instrument.

▶

Indicates related operations or explanations for the user's reference.

[ ]

Indicates a character string displayed on the display.

Setting Display

Indicates a setting display and describes the keystrokes required to display the relevant setting display.
Perform the operations in chronological order. This section describes the procedure under the assumption that these steps are being taken for the first time. There are cases where not all of the steps are required, depending on the required operation.

Setting Details

Provides the descriptions of settings.

Description

Describes restrictions, etc. regarding a relevant operation.

About an Electronic Manual

User's manuals for YS1000 are available on the following web site:
www.yokogawa.com/ns/ys/im/
You need Adobe Reader 7.0 or later (but the latest version is recommended) installed on the computer in order to open and read the manuals.

Introduction to Functions

YS1350 is a manual setter for SV setting that manually outputs a setpoint signal to a controller.
YS1360 is a manual setter for MV setting that manually outputs a manipulation signal to a final control element.

Features

- Color LCD display
  The monitoring and operation display is provided in color, and input and output values, various constants, and incorporated functions can be set freely using key switches on the front panel. The monitoring displays include LOOP Display, TREND Display, ALARM Display, and METER Display which provides information in much the same way as analog meters.

- Failsafe function
  Two CPUs are configured to provide manual operations and displays even if one of the CPUs becomes faulty. Moreover, because the instrument incorporates a hard manual circuit independent of the digital circuit, it can continue to generate manipulated output variables even if the digital circuit that includes the CPUs fails.

- AC/DC-common power supply with wide operating voltage range.
  The instrument can be powered by either AC (100 V AC) or DC (24 V DC).

- The front panel is dust- and water-proof (conforming to IP54).

- Abundant communication functions
  The instrument can incorporate Ethernet (Modbus/TCP) communication, serial communication (Modbus, PC-link, and YS protocol), and DCS-LCS communication.

Definition of Terms

- PV: Process variable input from process
- SV: Setpoint regarded as a control target
- MV: Manipulated variable for operating control elements such as valves.
- M mode: Mode in which internal setpoints or manipulated output variables are operated manually.
- C mode: Mode in which external setpoints (YS1350) or manipulated output variables (YS1360) are output.

Part Names

Front Panel Part Names

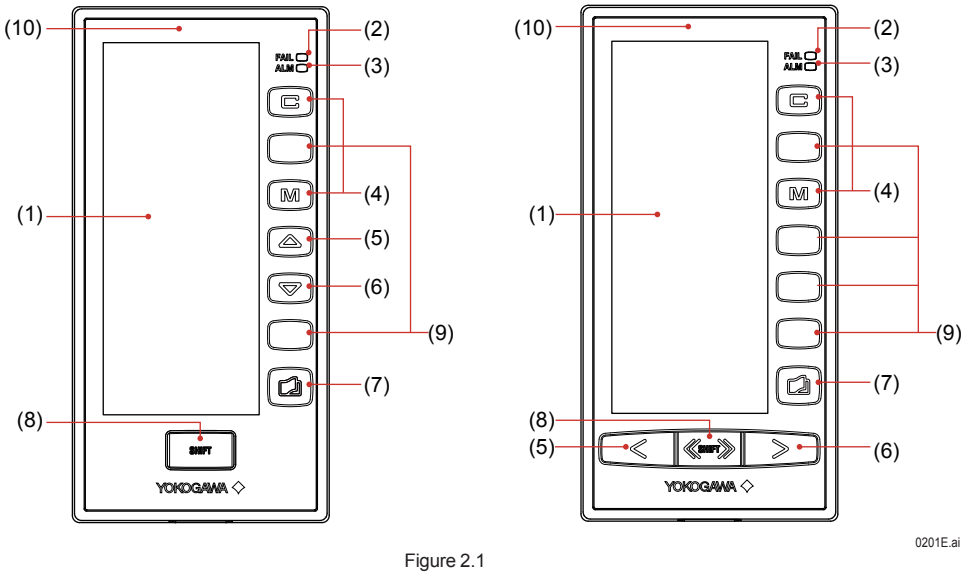

Figure 2.1

	YS1350
(1)	Color LCD display: 120 × 320 dots
(2)	FAIL lamp (LED: red)
(3)	ALM lamp (LED: yellow)
(4)	C mode key, M mode key, and LED indicators (C: green, M: yellow)
(5)	SV increase key
(6)	SV decrease key
(7)	Page key
(8)	SHIFT key
(9)	Software-key operation Key
(10)	TAG label (recommended position to attach label)

	YS1360
(1)	Color LCD display: 120 × 320 dots
(2)	FAIL lamp (LED: red)
(3)	ALM lamp (LED: yellow)
(4)	C mode key, M mode key, and LED indicators (C: green, M: yellow)
(5)	MV decrease key
(6)	MV increase key
(7)	Page key
(8)	Fast-change key/SHIFT key
(9)	Software-key operation Key
(10)	TAG label (recommended position to attach label)

► For the functions of each part: see “Monitoring and Control of Regular Operations (Operation Display)” in this manual.

Swinging the Front Panel Up and Down

Swinging up the front panel

1. Press upwards in the center of the bottom of the front panel. You can draw the front panel toward you until you feel a slight resistance and the movement of the front panel will stop.
   (You can swing up the front panel more smoothly if hold the top and bottom of the front panel.)
2. Swing the front panel up and out from that position.

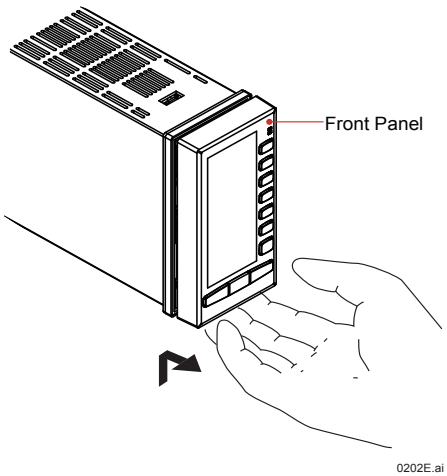

Figure 2.2

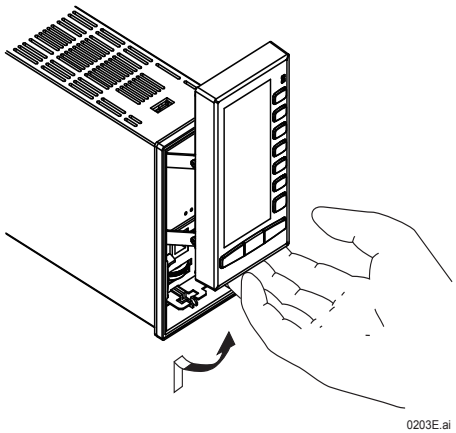

Figure 2.3

Swinging down the front panel

Push down on the center of the top of the front panel. When you feel a slight sense of resistance, stop pushing. Slide it forward from that position. It will click into place, indicating that it is locked.

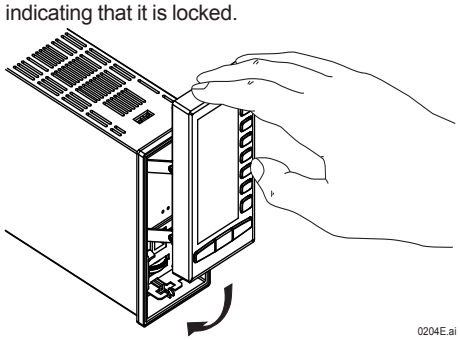

Figure 2.4

Part Names of the Internal Panel Seen with the Front Panel Swung up

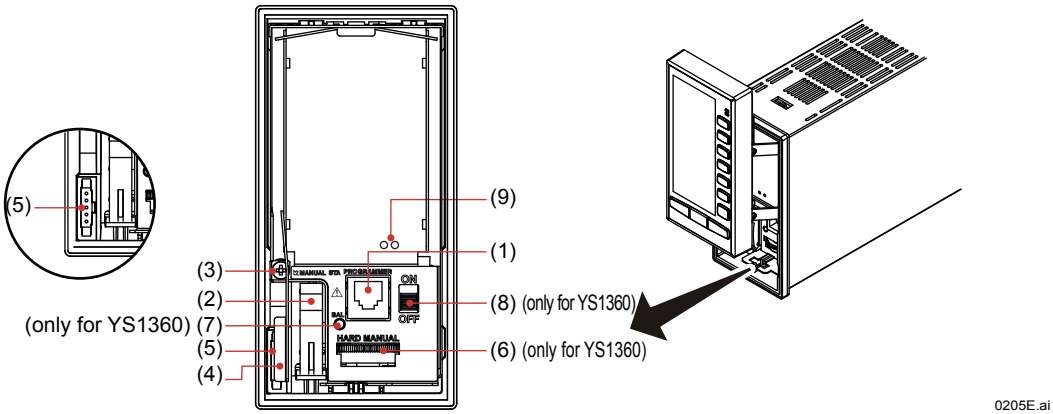

Figure 2.5

(1) Connector for connection to a PC (PROGRAMMER)
This is a communication cable connector for downloading, uploading, or monitoring parameters set using the YSS1000 Setting Software.

► YSS1000: YSS1000 Setting Software/YS1700 Programmable Function User's Manual

(2) Internal unit release lever
(3) An internal unit fixing screw
(4) Metal lever: Used only for YS1360.
Touch the metal lever to discharge static electricity. Before you connect the cable to the YS110 connector, touch the metal lever.
(5) Connector for YS110 standby manual station (MANUAL STA) : Used only for YS1360. For YS1350, do not connect anything to this connector.
(6) Hard manual operation wheel (HARD MANUAL) : Only for YS1360. YS1350 does not have this wheel.
An operation wheel to manipulate an output
(7) MV balance lamp (BAL) (Color: green) : Only for YS1360. YS1350 does not have this lamp.
Lights up when a manipulated output variable and the hard manual unit's output value agree with each other.
(8) Hard manual selector switch (ON/OFF) : Only for YS1360. YS1350 does not have this switch.
The switch used to switch to a manipulated variable (MV) set using the hard manual operation wheel.
(9) LED and switch for repair
Contact us for repair.

► Regarding items (4), (5), (6), (7), and (8): see "Backup Operation in the Event of Instrument Failure" in this manual.

Note

For products with suffix code -2xx, there are no hard manual unit-related parts ((6), (7), and (8)).

WARNING

Do not remove the internal unit from the instrument case. Contact YOKOGAWA's sales office or sales representative when removing the internal unit, as safety standard inspection is required.

WARNING

Explosion hazard.
Do not remove or insert the internal unit in explosive atmospheres.

CAUTION

Products with optional code /FM or /CSA cannot satisfy the explosion protection standards if the internal unit is removed.

YS1350/YS1360 Operating Procedure

When using the instrument for the first time, proceed according to the following sequence:

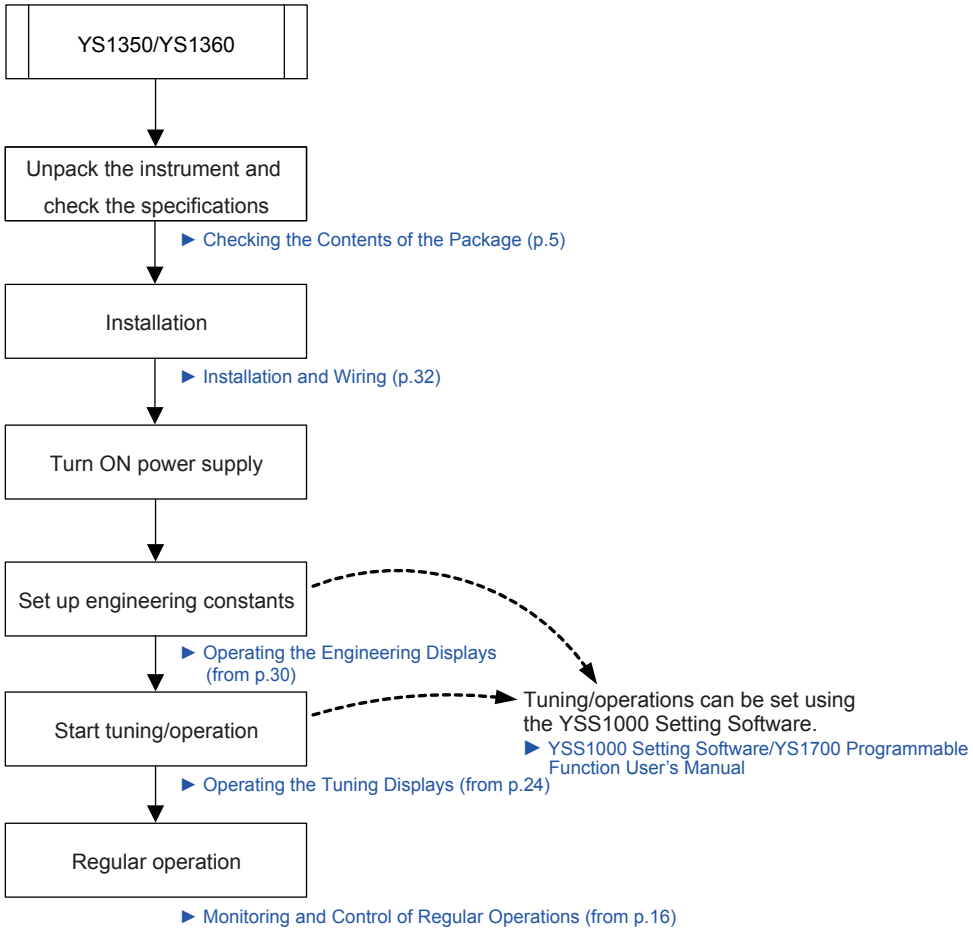
YS1350/YS1360
Unpack the instrument and check the specifications
► Checking the Contents of the Package (p.5)
Installation
► Installation and Wiring (p.32)
Turn ON power supply
Set up engineering constants
► Operating the Engineering Displays (from p.30)
Start tuning/operation
Tuning/operations can be set using the YSS1000 Setting Software.
► YSS1000 Setting Software/YS1700 Programmable Function User's Manual
► Operating the Tuning Displays (from p.24)
Regular operation
► Monitoring and Control of Regular Operations (from p.16)
0301E.ai

Figure 3.1

Basic Operations

Overview of Display Switching and Operation Keys

The YS1000 has the following three display groups:

(1) Operation Display Group

Includes the LOOP Display (YS1350) used to switch the operation mode during operation or set SV, LOOP Display (YS1360) used to manipulate MV, TREND Display that displays trends of PV and SV (YS1350) or MV (YS1360), ALARM Display that displays detailed alarm information, and METER Display that displays PV and SV (YS1350) or MV (YS1360) on a meter scale using a pointer.

(2) Tuning Display Group

Includes the Display and Setting Display for tuning parameters and Monitor Display for input/output signals.

(3) Engineering Display Group

Includes the display used to set functions as a manual setter for SV setting (YS1350) or a manual setter for MV setting (YS1360), Input Specification Setting Display, and Password Setting Display.

Selecting a Display

The flow of display selecting operations is as follows:

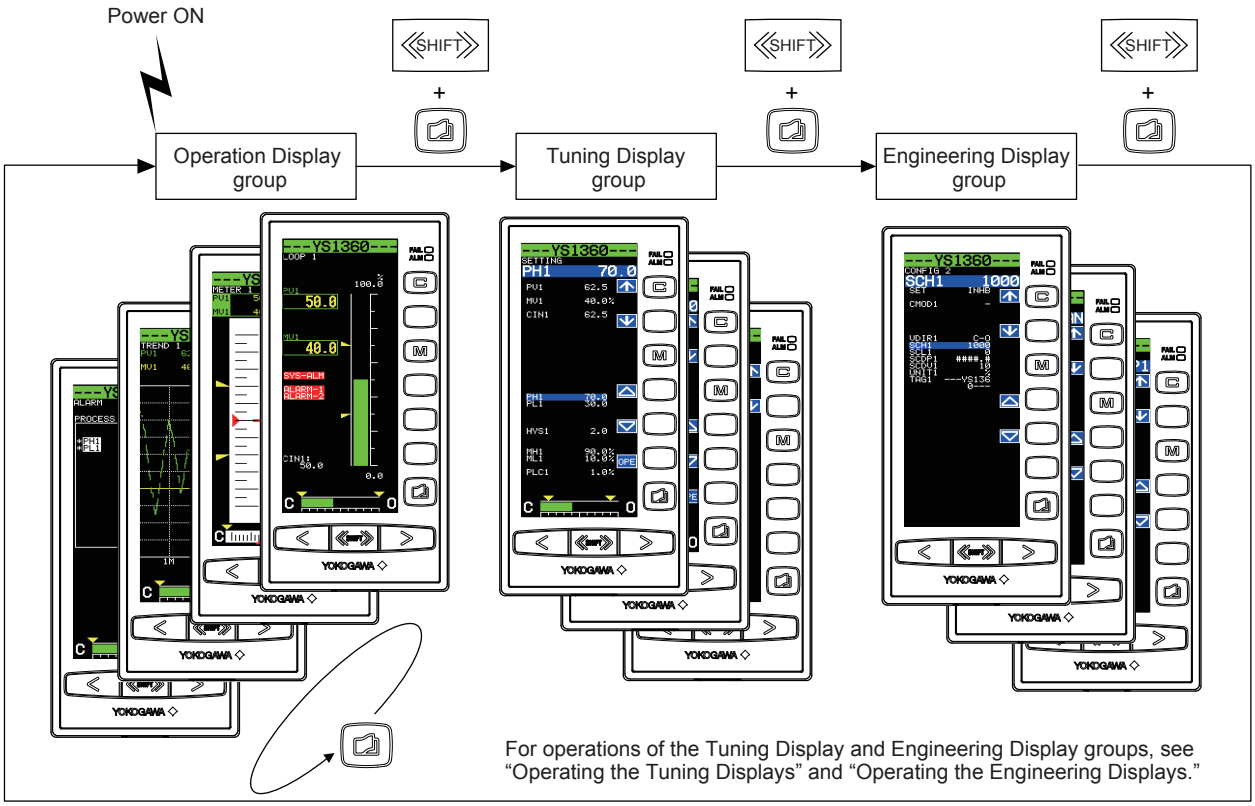
Power ON
SHIFT
+
Operation Display group
Tuning Display group
Engineering Display group
For operations of the Tuning Display and Engineering Display groups, see "Operating the Tuning Displays" and "Operating the Engineering Displays."

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Figure 4.1

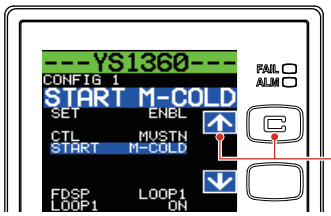
1. When the instrument's power is turned ON, the Operation Display appears.
2. Each time the Page key ( ) is pressed with the SHIFT key ( ) held down, the display is switched.
   The display changes in the order of Operation Display, Tuning Menu Display, and Engineering Menu Display, after which the Operation Display reappears.

Note

Operation of the SHIFT key + Page key (a two key keystroke) implies that you should press the Page key with the SHIFT key held down. Doing so in the opposite order does not switch the display.

Software keys

Software keys are keys displayed on the LCD. The functions of the software keys are assigned to the operation keys on the right of the display.



In the figure at the left, the ↑ (UP) software key corresponds with the mode key.

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Figure 4.2

Display Switching (factory setting)

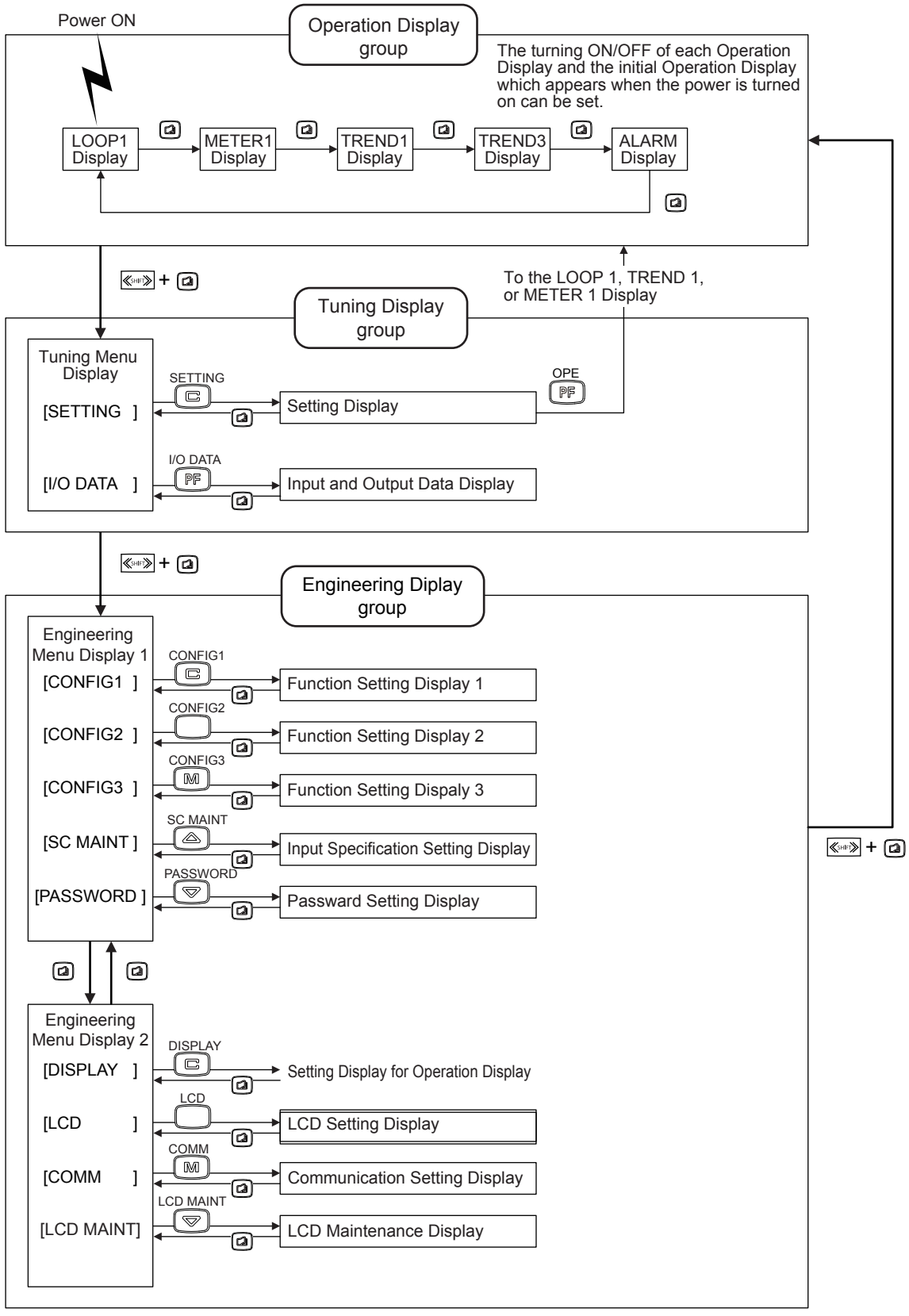
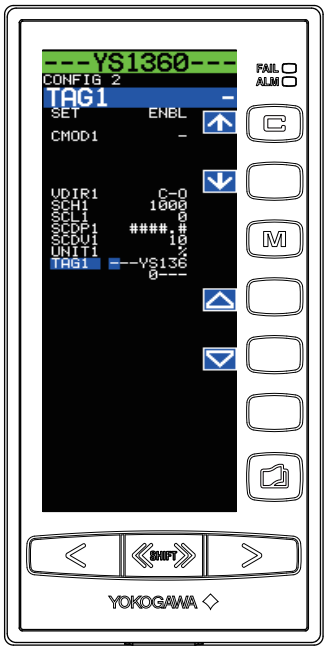


Figure 4.3

Registering a Tag

Setting Display

Engineering Display



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Operation Display > SHIFT + Page keys (to the Tuning Menu Display) > SHIFT + Page keys (to the Engineering Menu Display) > [**CONFIG2**] software key (Configuration Display 2)

Setpoint changing procedure (example of setting a tag):

(1) Press the [↓] software key to select and zoom in on [SET INHB].
(2) Press the [△] software key to change to [SET ENBL].
(3) Press the [↓] software key to select and zoom in on tag number 1 [TAG1].
(4) Press the [↓] or [↑] software key to move the cursor over the position where the tag is registered.
(5) Press the [△] or [▽] software key to change the character (setting is made on a character basis).
(6) Repeat steps (4) and (5) to register the tag.
(To erase a character, enter a space.)
(7) Press the Page key to return to the Engineering Menu Display.
(8) Press the SHIFT + Page keys to return to the Operation Display.

This completes the setting procedure.

Setting Details

Parameters	Names	Setting Range	Factory Default
TAG1	Tag number	12 digits of alphanumeric characters	For YS1350: ---YS1350--- For YS1360: ---YS1360---

Description

The tag is displayed in the top line of the LCD.
The settable ASCII codes are as shown below:

Space		!	“	#	$	%	&	’	(	)	*	+	,	-
.	/	0	1	2	3	4	5	6	7	9	:	;	<	=
>	?	@	A	B	C	D	E	F	G	H	I	J	K	L
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[
¥	]	^	_	`	a	b	c	d	e	f	g	h	i	j
k	l	m	n	o	p	q	r	s	t	u	v	w	x	y
z	{	¦	}	~										

Monitoring and Control of Regular Operations (Operation Display)

Monitoring and Operating the LOOP Display

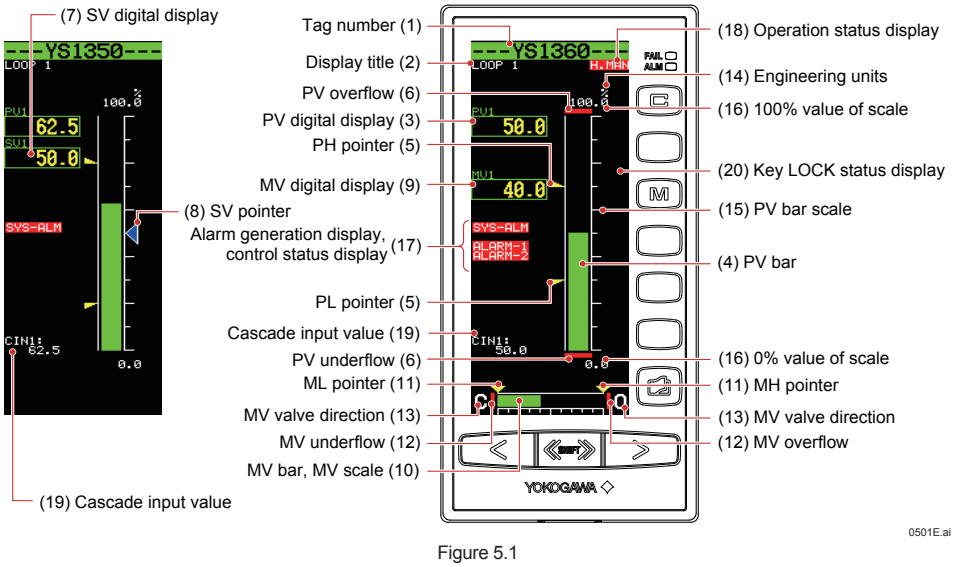

Figure 5.1

Table 5.1

No. in Figure	Name	Description
(1)	Tag number	A tag number combining alphanumeric characters and symbols having a maximum of 12 digits is displayed.
(2)	Display title	The title of the display being shown is indicated.
(3)	PV digital display	A PV value is displayed in engineering units in a digital value of five significant digits (seven digits including a sign and decimal point).
(4)	PV bar	A PV value is displayed in a bar. The bar display is in 200 dots at full scale (100%) and increases/decreases on a dot (0.5%) basis.
(5)	PH, PL pointers	PH values (high limit alarm setpoints for PV) and PL values (low limit alarm setpoints for PV) are indicated with triangular pointers.
(6)	PV underflow and PV overflow	A PV underflow is displayed if a PV value is below 0%, while a PV overflow is displayed if it exceeds 100%.
(7)	SV digital display (YS1350)	An SV value is displayed in engineering units in a digital value of five significant digits (seven digits including a sign and decimal point).
(8)	SV pointer (YS1350)	SV values are indicated with triangular pointers. The pointer display moves up and down with a resolution of 0.5%.
(9)	MV digital display (YS1360)	An MV value is displayed in a digital value of four significant digits (six digits including a sign and decimal point, with the number of decimal places fixed to one digit) in a % display.
(10)	MV bar MV scale (YS1360)	An MV value is displayed in a bar. The bar display is in 80 dots (100%) at full scale, divided into 20 blocks (5%) for display. It increases/decreases on a dot (1.25%) basis. A scale divided into 10 (10% segments) is also displayed.
(11)	MH and ML pointers (YS1360)	MH values (high limit setpoints for MV) and ML values (low limit setpoints of MV) are indicated with triangular pointers.
(12)	MV underflow and MV overflow (YS1360)	An MV underflow is displayed if an MV value is below 0%, while an MV overflow is displayed if it exceeds 100%.
(13)	MV valve direction (YS1360)	MV valve direction is displayed as [C] (closed) or [O] (open).
(14)	Engineering unit	Engineering units (UNIT) are displayed in a maximum of seven digits.
(15)	PV bar scale	The PV bar scale is displayed divided into a maximum of 10 segments (10% segments).

Table 5.2

<table>
<tr><th>No. in Figure</th><th>Name</th><th>Description</th></tr>
<tr><td>(16)</td><td>0% value of scale, 100% value of scale</td><td>0% value of scale (SCL) and 100% value of scale (SCH) are displayed in engineering units in a digital value of five significant digits (seven digits including a sign and decimal point).</td></tr>
<tr><td>(17)</td><td>Alarm generation display, Control status display</td><td>Alarm and control statuses are displayed in abbreviations. See Tables 5.3.</td></tr>
<tr><td>(18)</td><td>Operation status display</td><td>The controller operation status is displayed.
<table>
<tr><th>Display</th><th>Description</th><th>Display Priority Order</th></tr>
<tr><td>[POWER DOWN]</td><td>Power down is being detected.</td><td>(1)</td></tr>
<tr><td>[H.MAN]</td><td>Hard manual selector switch has been activated.</td><td>(2)</td></tr>
<tr><td>(No indication)</td><td>The instrument is operating.</td><td rowspan="2">(3)</td></tr>
<tr><td>[STOP]</td><td>Operation stopped (such as while setting a function on the Engineering Display, etc.)</td></tr>
</table></td></tr>
<tr><td>(19)</td><td>Cascade input value</td><td>When the instrument is used in the C mode, a cascade input value is displayed in engineering units in a digital value of five significant digits (seven digits including a sign and decimal point).</td></tr>
<tr><td>(20)</td><td>Key LOCK status display</td><td>The key LOCK status is displayed.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>[ALLK]</td><td>⊏, and M keys, SV increase and decrease (△, ▽) keys, and MV increase and decrease (＜, ＞) keys are disabled.</td></tr>
<tr><td>[MDLK]</td><td>⊏, and M keys are disabled.</td></tr>
<tr><td>[SVLK]</td><td>SV increase and decrease (△, ▽) keys are disabled.</td></tr>
<tr><td>[MVLK]</td><td>MV increase and decrease (＜, ＞) keys are disabled.</td></tr>
</table></td></tr>
</table>

Table 5.3 Meaning of Display Abbreviations

Symbol	Meaning
SYS-ALM	A system alarm occurred.
ALARM-1	A loop 1 process alarm occurred.
CAS	Remote operation being conducted in response to external setpoint input
DDC	Remote operation being conducted in response to SV (YS1350)/MV (YS1360) from a high-level device
BUM	Transition to backup manual status
EXT-MAN	Transition to manual control in response to external digital input

Operating the LOOP Display

This section describes keystrokes for performing various settings and operations on the LOOP Display.

(1) Switching the operation mode

M M mode key: Switches the operation mode to manual control (M mode).
⊏ C mode key: Switches the operation mode to cascade setting automatic control (C mode).

Moreover, the LED inside the operation mode key corresponding to the current operation mode lights up.

Note

If a cascade input signal is −6.3% or less or 106.3% or more, the operation mode cannot be switched to C mode.
► For switching the operation mode: see “Switching of Operation Modes” in this manual.

(2) SV setting operation (YS1350)

The SV setting key changes the setpoint (SV).
This key is enabled when the operation mode is in the M mode.

△ SV increase key: Increases an SV value.
▽ SV decrease key: Decreases an SV value.

(3) MV operation (YS1360)

The MV operation key is used to manually operate a manipulated output variable (MV). This key is enabled when the operation mode is in the M mode.

＞ MV increase key: Increases an MV value.
＜ MV decrease key: Decreases an MV value.

Moreover, pressing an MV operation key with the ≪SHIFT≫ (fast-change key/SHIFT key) held down accelerates the MV-value increase/decrease speed.

Monitoring and Operating the METER Display

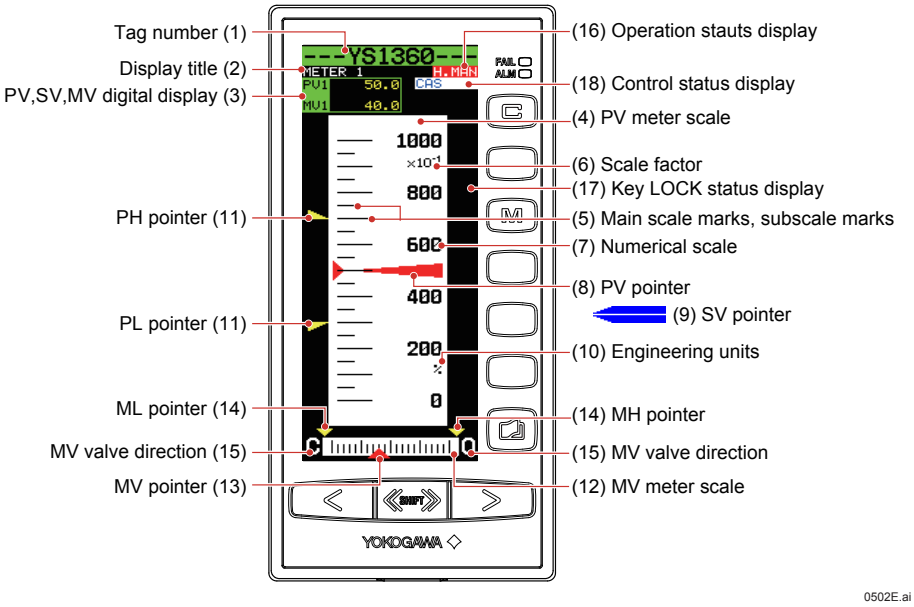

Figure 5.2

Table 5.4

No. in Figure	Name	Description
(1)	Tag number	As on the LOOP Display, a tag number appears here.
(2)	Display title	The title of the display being shown is indicated.
(3)	PV, SV, and MV digital display	PV, SV (YS1350), and MV (YS1360) digital values are displayed here.
(4)	PV meter scale	The PV meter scale displays main scal and subscale marks, a numerical scale, a scale factor, and engineering units.
(5)	Main scale marks, subscale marks	The main scale marks and subscale marks are determined by setting the variables to the 0% value of scale (SCL) and to the 100% value of scale (SCH), which causes the scale to be automatically divided into divisions based on those values.
(6)	Scale factor	The scale range is clearly represented in the range of the number of numerical scale digits using the power of 10 (× 10^n). It is possible to set the value of the power, however it can also be automatically determined from the 0% value of scale (SCL) and 100% value of scale (SCH).
(7)	Numerical scale	The numerical scale is automatically determined from the 0% value of scale (SCL) and 100% value of scale (SCH), and is displayed centered and to the right of the main scale marks. The number of digits to be displayed is three (or four digits if there is no decimal point).
(8)	PV pointer	A PV value is indicated by two pointers (at the left and right sides of the scale). The pointer display moves up and down with a resolution of 0.5%.
(9)	SV pointer (YS1350)	An SV value is indicated with a pointer. The pointer display moves up and down with a resolution of 0.5%.
(10)	Engineering units	Engineering units (UNIT) are displayed in a maximum of seven digits.
(11)	PH and PL pointers	PH values (high limit alarm setpoints for PV) and PL values (low limit alarm setpoints for PV) are indicated with triangular pointers.
(12)	MV meter scale (YS1360)	Scale marks are displayed on the MV meter scale. The mark at the far left is the 0% position and the mark at the far right is the 100% position. Each scale division is 5%.
(13)	MV pointer (YS1360)	MV values are indicated with a pointer. Since the scale's full scale is 80 dots (100%), the MV pointer increases and decreases in a resolution of 1.25%.
(14)	MH and ML pointers (YS1360)	MH values (high limit setpoints for MV) and ML values (low limit setpoints for MV) are indicated with triangular pointers.
(15)	MV valve direction (YS1360)	The MV valve direction is displayed as [C] (closed) or [O] (open).
(16)	Operation status display	The controller operation status is displayed.

Display	Description	Display Priority Order
[POWER DOWN]	Power down is being detected.	(1)
[H.MAN]	Hard manual selector switch has been activated.	(2)
(No indication)	The instrument is operating.	(3)
[STOP]	Operation stopped (such as while setting a function on the Engineering Display, etc.)	

Table 5.5

<table>
<tr><th>No. in Figure</th><th>Name</th><th>Description</th></tr>
<tr><td>(17)</td><td>Key LOCK status display</td><td>The key LOCK status is displayed.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>[ALLK]</td><td>, and keys, SV increase and decrease (,) keys, and MV increase and decrease (,) keys are disabled.</td></tr>
<tr><td>[MDLK]</td><td>, and keys are disabled.</td></tr>
<tr><td>[SVLK]</td><td>SV increase and decrease (,) keys are disabled.</td></tr>
<tr><td>[MVLK]</td><td>MV increase and decrease (,) keys are disabled.</td></tr>
</table></td></tr>
<tr><td>(18)</td><td>Control status display</td><td>Control status is displayed in abbreviations. See Tables 5.6.</td></tr>
</table>

Table 5.6 Meaning of Display Abbreviations

Symbol	Meaning
CAS	Remote operation being conducted in response to external setpoint input
DDC	Remote operation being conducted in response to SV (YS1350) /MV (YS1360) from a high-level device
BUM	Transition to backup manual status
EXT-MAN	Transition to manual control in response to external digital input

Operating the METER Display

The following three operations can be conducted on the METER Display.

(1) Operation mode switching operation
(2) SV setting operation (YS1350)
(3) MV operation (YS1360)

The operation methods are the same as those of the LOOP Display.

Monitoring and Operating the TREND Display

The TREND Display provides trend displays of PV, SV (YS1350), MV (YS1360) in addition to the LOOP Display functions. The TREND 1 Display can provide trend displays of PV1, SV1 (YS1350), and MV1(YS1360) and the TREND 3 Display can show those of any four data selected from PV1, SV1 (YS1350), MV1 (YS1360), X1, X2, Y1 (YS1360) and Y2. TREND Display also enables display data to be turned ON/OFF. It does not display control statuses and alarms that have occurred.

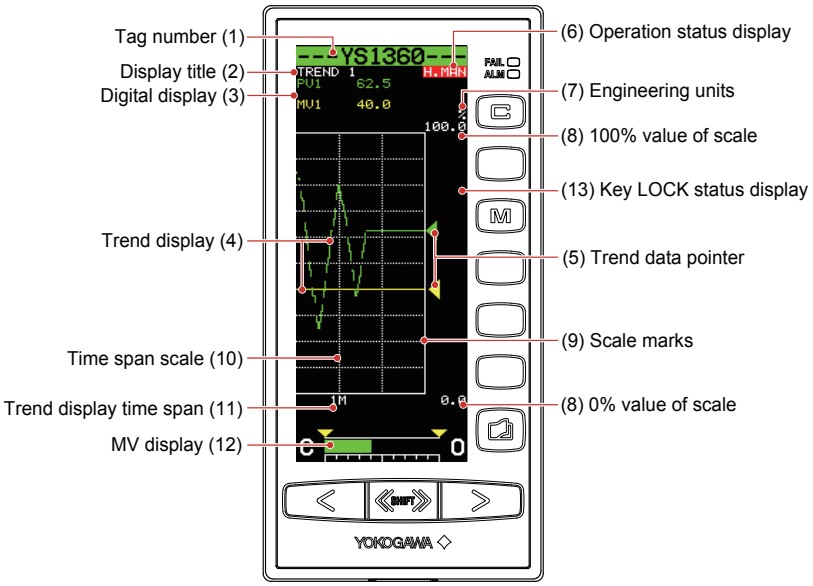

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Figure 5.3

Table 5.7

No. in Figure	Name	Description
(1)	Tag number	A tag number combining alphanumeric characters and symbols having a maximum of 12 digits is displayed.
(2)	Display title	The title of the display being shown is indicated.
(3)	Digital display	PV, SV (YS1350), and MV (YS1360) digital values are displayed. For TREND 3 Display, data selections 1 to 4 are indicated.
(4)	Trend display	The time span of the set trend display is divided into 60 partitions, and PV, SV (YS1350) and MV (YS1360) values in the period of one time partition are displayed with the smallest and largest values of selected data in the vertical line of one element. Trend display is clipped and displayed at 0% if a relevant value is below 0% or at 100% if it exceeds 100%.
(5)	Trend data pointers	PV, SV (YS1350), and MV (YS1360) values and selected data are indicated with triangular pointers. The pointer display moves up and down with a resolution of 0.5%.
(6)	Operation status display	The controller operation status is displayed.

Display	Description	Display Priority Order
[POWER DOWN]	Power down is being detected.	(1)
[H.MAN]	Hard manual selector switch has been activated.	(2)
(No indication)	The instrument is operating.	(3)
[STOP]	Operation stopped (such as while setting a function on the Engineering Display, etc.)	

(7)	Engineering units	Engineering units (UNIT) are displayed in a maximum of seven digits.
(8)	0% value of scale, 100% value of scale	The 0% value of scale (SCL) and the 100% value of scale (SCH) of PV are displayed in digital values of five significant digits (seven digits including a sign and decimal point).
(9)	Scale marks	A scale divided into a maximum of 10 divisions (10% segments) is displayed. Moreover, horizontal lines corresponding to the scale marks are indicated in dotted lines.

Table 5.8

<table>
<tr><th>No. in Figure</th><th>Name</th><th>Description</th></tr>
<tr><td>(10)</td><td>Time span scale</td><td>The time span scale (a vertical line) is displayed by a dotted line at the 60-line positions. If the scale marks are divided into 4 divisions or more, the time span scale is also displayed at the 30-line positions.</td></tr>
<tr><td>(11)</td><td>Trend display time span</td><td>The trend display time span setpoint is displayed. The trend display span is 90 lines, but it represents the time span for 60 lines. Trend display is provided such that the 0-line position is the current time, while the 90-line position is the maximum past time. Changing the trend display time span causes data that has been displayed up to that time to be cleared.</td></tr>
<tr><td>(12)</td><td>MV display (YS1360)</td><td>The MV bar, MV scale, MH pointer, ML pointer, MV underflow, MV overflow, and MV valve direction are displayed. The display contents are the same as those of the LOOP Display.</td></tr>
<tr><td>(13)</td><td>Key LOCK status display</td><td>The key LOCK status is displayed.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>[ALLK]</td><td>, and M keys, SV increase and decrease (,) keys, MV increase and decrease (,) keys are disabled.</td></tr>
<tr><td>[MDLK]</td><td>, and M keys are disabled.</td></tr>
<tr><td>[SVLK]</td><td>SV increase and decrease (,) keys are disabled.</td></tr>
<tr><td>[MVLK]</td><td>MV increase and decrease (,) keys are disabled.</td></tr>
</table>
</td></tr>
</table>

Operating the TREND Displays

The following operations can be conducted on the TREND 1 Display:
(1) Operation mode switching of the loop displayed
(2) SV setting operation of the loop displayed (YS1350)
(3) MV operation of the loop displayed (YS1360)

The following operations can be conducted on the TREND 3 Display:
(1) MV operation (YS1360)

The operation methods are the same as those of the LOOP Display.

Monitoring and Operating the ALARM Display

The ALARM Display collectively indicates detailed information when alarm(s) occurs. It allows the user to acknowledge unacknowledged alarms and events.

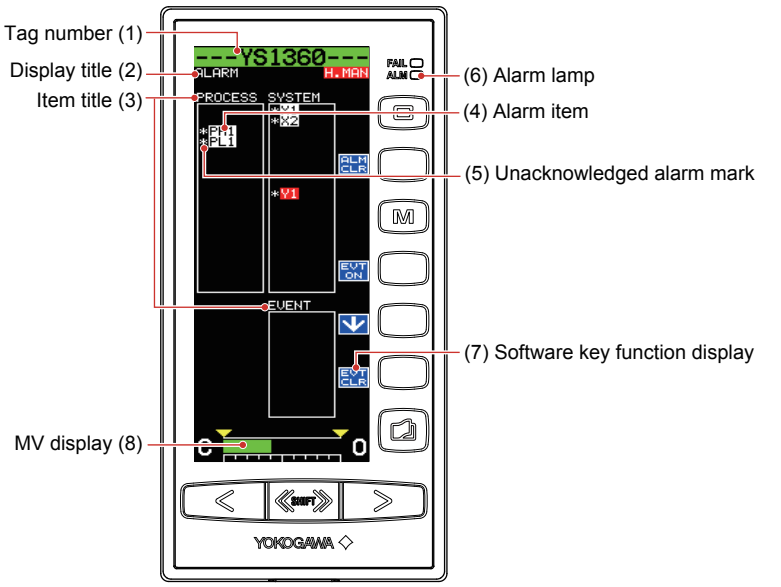

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Figure 5.4

Table 5.9

No. in Figure	Name	Description
(1)	Tag number	The tag number combining alphanumeric characters and symbols having a maximum of 12 digits is displayed.
(2)	Display title	The title of the display being shown is indicated.
(3)	Item title	Alarms and events that have occurred or been generated are displayed on a type basis. They are classified into the following three types: **Display** / **Description** [PROCESS] — Process alarms [SYSTEM] — System alarms [EVENT] — Event display
(4)	Alarm item	There are two types of display formats for alarm items as follows: Red backlit display of items: An alarm(s) is currently being generated Normal display of items: Indicates that an alarm(s) was generated in the past, but the situation has now recovered ► For causes of alarms that have occurred and actions to be taken: see "Troubleshooting" in this manual. The alarm items to be displayed are as follows: Process Alarms **Display** / **Description** [PH1] — PV1 high limit alarm [PL1] — PV1 low limit alarm System Alarms **Display** / **Description** [X1] to [X2] — Input overrange Register names X1 to X2 that have been allocated to each input terminal are displayed. [Y1] — Output open (current output only). [COMM] — RS-485 communications error, DCS-LCS communication error [ETHER] — Ethernet communication error [DATA] — YSS1000 writing incomplete [CALR] — Adjustment inspection error Event indication **Display** / **Description** [EVENT1] to [EVENT5] — User-set events 1 to 5

Table 5.10

No. in Figure	Name	Description
(5)	Unacknowledged alarm marks	For unacknowledged alarms, [*] is indicated in front of alarm items.
(6)	Alarm lamp	Lights up if a process alarm or system alarm occurs.
(7)	Software key function display	The [ALM CLR] software key, [EVT ON] software key, [↓] key, and [EVT CLR] software key functions are assigned to the relevant operation keys at the right of the display. ► For operation: see the following “Operating the ALARM Display.”
(8)	MV display (YS1360)	MV bar, MV scale, MH pointer, ML pointer, MV underflow, MV overflow, and MV valve direction are displayed. The display contents are the same as those of the LOOP Display.

Operating the ALARM Display

The following operations can be conducted on the ALARM Display:

(1) MV operation (the same as that of the LOOP Display) (YS1360)
(2) Acknowledgement of unacknowledged alarms/events
(3) Re-display of event indication

- **Acknowledging unacknowledged alarms/events**

  The Alarm [ALM CLR] software key is used to acknowledge that an alarm has occurred. When this key is pressed, the “*” mark that indicates that the alarm concerned has not yet been acknowledged, and that indicates currently not occurring alarms will be erased, implying that the alarm(s) has been acknowledged.
  The Event [EVT CLR] software key is used to acknowledge an event. When this key is pressed, the “*” mark that indicates that the event concerned has not yet been acknowledged, and that indicates events currently not generated will be erased, implying that the event(s) has been acknowledged.

- **Re-displaying event indication**

  Browse through the event lines using the [↓] software key to select an event you wish to see (displayed in blue) and then press the [EVT ON] software key. This causes the event to be re-displayed.

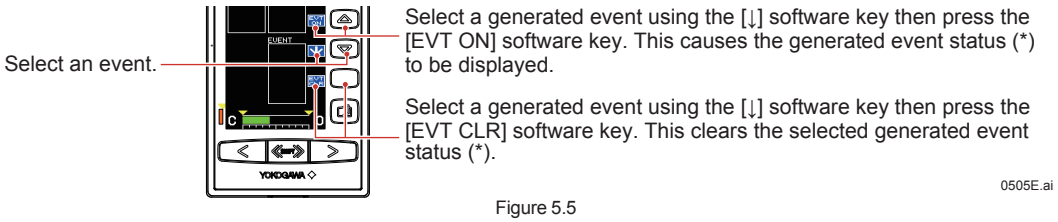
Select an event.
Select a generated event using the [↓] software key then press the [EVT ON] software key. This causes the generated event status (*) to be displayed.
Select a generated event using the [↓] software key then press the [EVT CLR] software key. This clears the selected generated event status (*).
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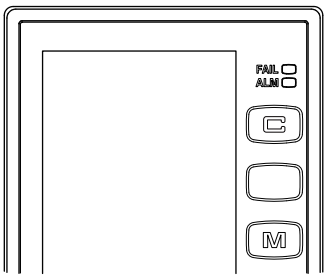
Figure 5.5

Switching of Operation Modes

Switching by Keystroke



The operation mode can be switched by pressing the relevant key in the table below. This causes the light inside the key corresponding to the selected operation mode to light up. Note that on the ALARM Display, the operation mode cannot be switched.

Key	Name	Function
M	M mode key	Press this key to change to manual operation.
C	C mode key	Press this key to change to control to set a setpoint value or manipulated output variable from an external analog signal or communication as a cascade setting.

Note

If the operation mode switching function is allocated to digital input, there may be cases where the operation mode cannot be switched by keystrokes. In such cases, check the allocation of the digital input function.

Switching in Response to Digital Input

No function is allocated to digital input when shipped from the factory. To switch the operation mode in response to digital input, the operation mode switching function needs to be allocated to digital input.

► For digital input function assignment: see section 1.5, Setting Digital Input Functions in the YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting User’s Manual.

Operating the Tuning Displays

There are displays for setting and displaying tuning parameters and a display for monitoring input/output signals. To set tuning parameters, proceed according to the setting examples below, and refer to "Overview of Display Switching and Operation Keys" and "List of Parameters".

- ► For displaying and setting parameters: see "List of Parameters" in this manual.
- ► For a description of tuning parameter functions: see YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting User's Manual.

Note

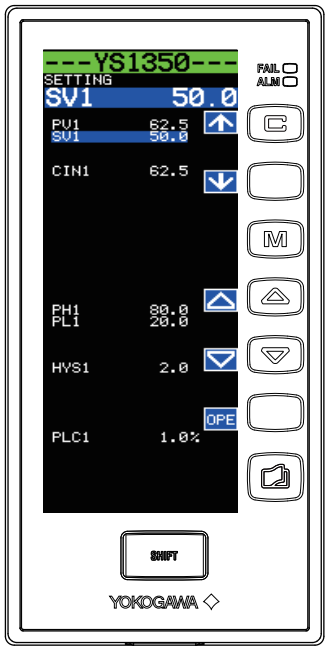
YS1000 has a password function as a security function. If the password has been set up, enter it and then change parameters.

- ► For setting and canceling passwords: see 2.2.2, Inhibiting/Enabling Parameter Change, in the YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting User's Manual.

Setting SV1 (YS1350)

Setting Display

Tuning Display



0601E.ai

Operation Display > SHIFT + keys (to the Tuning Menu Display) > [**SETTING**] software key (Setting Display)

Setpoint changing procedure (example of changing SV1):

(1) Press the [↓] software key to select and zoom in on setpoint value 1 [SV1 50.0].
(2) Press the [△] or [▽] software key to change the setpoint. Holding it down accelerates the value increase/decrease speed.
(3) Press the Page key to return to the Tuning Menu Display.
(4) Press the SHIFT + Page keys twice to return to the Operation Display.

This completes the setting procedure.

Setting Details

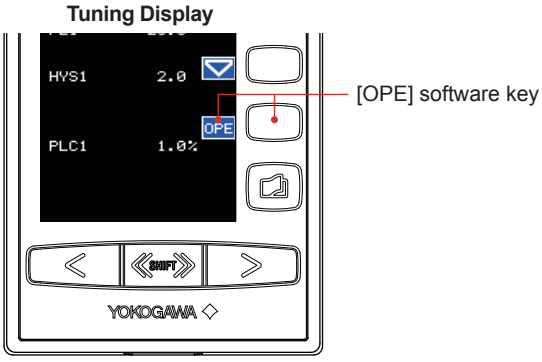
Parameters	Names	Setting Range	Factory Default
SV1	Setpoint value 1	Equivalent to -6.3 to 106.3% in the engineering unit (*1)	0.0

*1: Engineering unit set using the engineering parameters SCH1, SCL1, and SCDP1.

Displaying the Operation Display While the Tuning Display is being Shown

Pressing the [OPE] software key while setting a tuning parameter returns you to the Operation Display.

Tuning Display

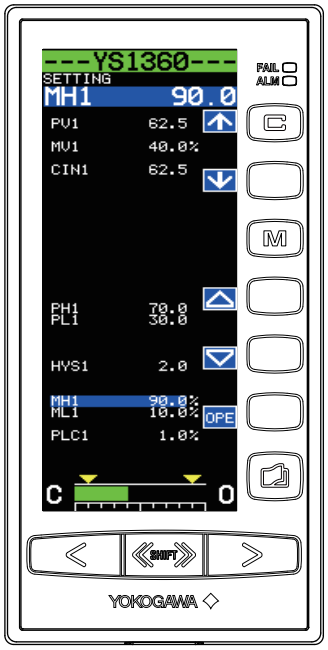


0602E.ai

Setting the High and Low Limit Setpoints of MV (YS1360)

Setting Display

Tuning Display



0603E-01.ai

Operation DIsplay [SHIFT]+[ ] key (to the Tuning Menu Display) > [**SETTING**] software key (Setting Display)

Setpoint changing procedure

(1) Press the [↓] software key to select and zoom in on high limit setpoint of MV1 [MH1].
(2) Press the [△] or [▽] software key to change the setpoint. Holding it down accelerates the value increase/decrease speed.
(3) Press the [↓] software key to select and zoom in on low limit setpoint of MV1 [ML1].
(4) Set ML1 in the same way as (2).
(5) Press the Page key to return to the Tuning Menu Display.
(6) Press the SHIFT + Page keys twice to return to the Operation Display.

This completes the setting procedure.

Setting Details

Parameters	Name	Setting Range	Factory Default
MH1	High limit setpoint of MV1	-6.3 to 106.3%	106.3
ML1	Low limit setpoint of MV1	-6.3 to 106.3%	-6.3

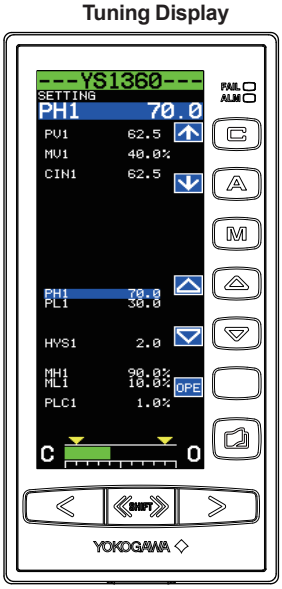
Description

The high and low limit setpoints of MV1 function only in the C mode (cascade mode or computer mode based on an external analog signal) (they do not function in the M mode).
Set the MH1 high limit setpoint of MV1 to a value greater than the ML1 low limit setpoint of MV1.

Setting Alarms

Setting Display

Tuning Display



0603E.ai

Operation Display > [SHIFT] + [ ] keys (to the Tuning Menu Display) > [**SETTING**] software key (Setting Display)

Setpoint changing procedure

(1) Press the [↓] software key to select and zoom in on high limit alarm setpoint for PV1 [PH1].
(2) Press the [△] or [▽] software key to change the setpoint. Holding it down accelerates the value increase/decrease speed.
(3) Press the [↓] software key to select and zoom in on low limit alarm setpoint for PV1 [PL1].
(4) Set PL1 in the same way as (2).
(5) Press the Page key to return to the Tuning Menu Display.
(6) Press the SHIFT + Page keys twice to return to the Operation Display.

This completes the setting procedure.

(The figure at the left shows YS1360. The setpoint changing procedure and parameters are the same as those of YS1350.)

Setting Details

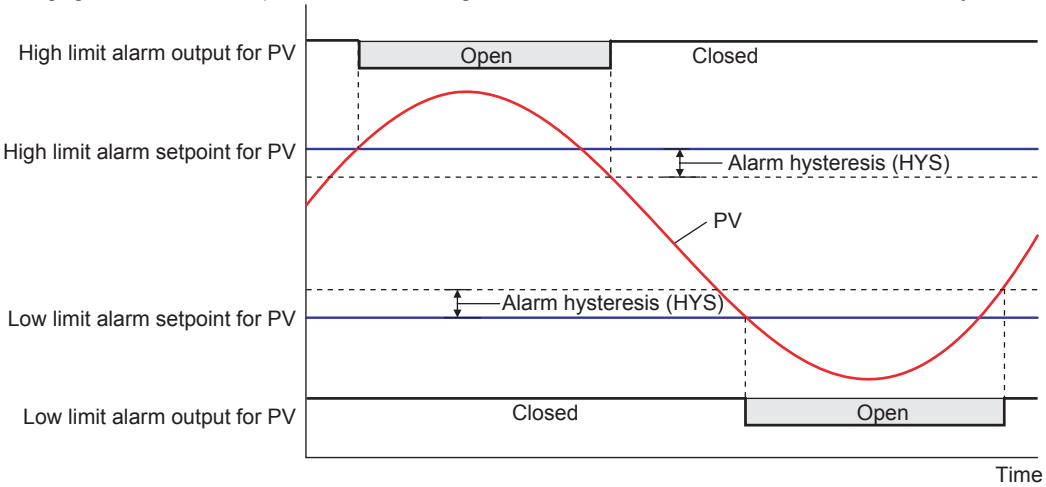
Parameters	Name	Setting Range	Factory Default
PH1	High limit alarm setpoint for PV 1	Engineering units equivalent to −6.3 to 106.3% (*1)	106.3
PL1	Low limit alarm setpoint for PV 1	Engineering units equivalent to −6.3 to 106.3% (*1)	-6.3
HYS1	Alarm hysteresis	Engineering units equivalent to 0.0 to 20.0% (*1)	2.0

*1: Engineering unit set using the engineering parameters SCH1, SCL1, SCDP1.

Description

If the high limit alarm setpoint for PV is set to the maximum values, no alarm is generated.
If the low limit alarm setpoint for PV is set to the minimum values, no alarm is generated.
Alarm hysteresis HYS1 acts on PH1, PL1 collectively.

The following figure shows an example of actions of the high limit alarm for PV, low limit alarm for PV, and alarm hystereses.



For an example in the figure above, the contact type is such that the contact opens if an event occurs (factory default).

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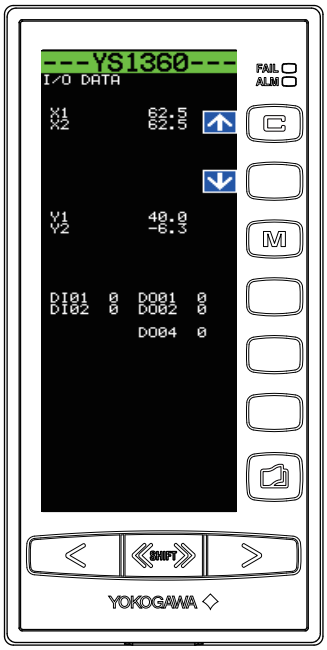
Confirming Input and Output Data

Setting Display

Tuning Display



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Operation Display > SHIFT + keys (to the Tuning Menu Display) > [**I/O DATA**] software key (Input and Output Data Display)

The input and output values of each terminal can be displayed.

(1) Press the [↓] software key to select and zoom in on parameter.
(2) Press the Page key to return to the Tuning Menu Display.
(3) Press the SHIFT + Page keys twice to return to the Operation Display.

This completes the operation.

Setting Details

Parameters	Name
X1	Analog input 1
X2	Analog input 2
Y1	Analog output 1 (YS1360)
Y2	Analog output 2
DI01	Digital input 1
DI02	Digital input 2
DO01	High linit alarm output
DO02	Low linit alarm output
DO04	C/M status output

Operating the Engineering Displays

There is a display for setting up functions as Manual Setter for SV Setting (YS1350)/Manual Setter for MV Setting (YS1360), the Input Specification Setting Display, and the Password Setting Display. To set engineering parameter settings, proceed according to the setting examples below, and refer to the “Overview of Display Switching and Operation Keys” and “List of Parameters.”

► For displaying and setting parameters: see “List of Parameters” in this manual.
► For a description of engineering parameter functions: see YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting User’s Manual.

CAUTION

There is a SET parameter in the engineering parameters to prevent accidental changes to settings. Unless this parameter setting is changed from INHB (setting inhibited) to ENBL (setting enabled), parameters on the same display cannot be changed. Be aware that changing the setting to ENBL causes YS1000’s control action and input/output to be changed.

Note

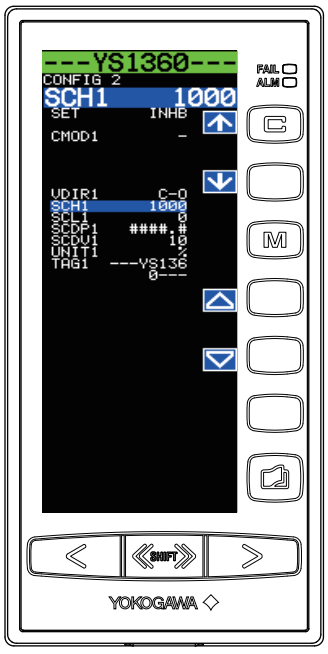
YS1000 has a password function as a security function. If the password has been set up, enter it and then change parameters.

► For setting and canceling passwords: see 4.2.2, Inhibiting/Enabling Parameter Change, in the YS1350 Manual Setter for SV Setting/ YS1360 Manual Setter for MV Setting User’s Manual.

Setting the Scale and Decimal Point Position for Process Variables

Setting Display

Engineering Display



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Operation Display > SHIFT + keys (to the Tuning Menu Display) > SHIFT + keys (to the Engineering Menu Display) > [**CONFIG2**] software key (Configuration Display 2)

Setpoint changing procedure (example of changing scale):

(1) Press the [↓] software key to select and zoom in on [SET INHB].
(2) Press the [△] software key to change to [SET ENBL].
(3) Press the [↓] software key to select and zoom in on the 100% value of scale 1 [SCH1].
(4) Press the [△] or [▽] software key to change the setpoint. Holding it down accelerates the value increase/decrease speed.
(5) Press the [↓] software key to select and zoom in on the 0% value of scale 1 [SCL1].
(6) Set SCL1 in the same way as (4).
(7) Press the [↓] software key to select and zoom in on decimal point position 1 [SCDP1 ####.#].
(8) Press the [△] or [▽] software key to change the setpoint.
(9) Press the Page key to return to the Engineering Menu Display.
(10) Press the SHIFT + Page keys to return to the Operation Display.

This completes the setting procedure.

Setting Details

Parameters	Names	Setting Range	Factory Default
SCH1	100% value of scale	-80000 to 80000	1000
SCL1	0% value of scale	-80000 to 80000	0
SCDP1	Decimal point position	#####, ####.#, ###.##, ##.###, #.####	####.#

Description

The figure below shows an example of setting the 100% value of scale to 1000, the 0% value of scale to 0, and the decimal point position to one decimal place (####.#). Process variables and setpoints are displayed on the scale that is set here.

Note: If a wide scale span (100% to 0% value of scale) is specified, the value less than 0.1% of PV may fluctuate.

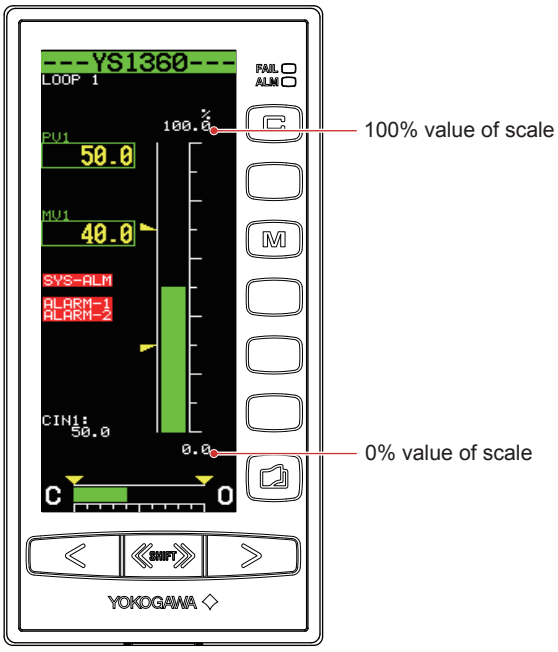


Figure 7.1

Installation and Wiring

For the following, see the YS1000 Series Replacement Manual.
- Installation and wiring for YS1350/YS1360-□2□, -□3□, -□4□, and -□5□
- Connection of the RJC sensor provided with the product with optional code /A02

Installation Location

WARNING

For products with optional code /FM or /CSA:
1) Devices must be installed by professionally trained personnel.
2) In case of option code /FM, install devices according to NEC (National Electrical Code: ANSI/NFPA-70).
   In case of option code /CSA, install devices according to CEC(Canadian Electric Code:C22. 1-06).

The instrument should be installed in indoor locations meeting the following conditions:

- **Instrumented panel**
  This instrument is designed to be mounted in an instrumented panel. Mount the instrument in a location where its terminals will not inadvertently be touched.
- **Well ventilated locations**
  Mount the instrument in well ventilated locations to prevent the instrument's internal temperature from rising. To mount multiple indicating controllers, see the external dimensions/panel cutout dimensions which follow. If mounting other instruments adjacent to the instrument, comply with these panel cutout dimensions to provide sufficient clearance between the instruments.
- **Locations with little mechanical vibration**
  Install the instrument in a location subject to little mechanical vibration.
- **Horizontal location**
  Mount the instrument horizontally and ensure that it is level, with no inclination to the right or left.

Note

If the instrument is moved from a location with low temperature and low humidity to a place with high temperature and high humidity, or if the temperature changes rapidly, condensation will result. Moreover, in the case of thermocouple inputs, measurement errors will result. To avoid such a situation, leave the instrument in the new environment under ambient conditions for more than 1 hour prior to using it.

Do not mount the instrument in the following locations:

- **Outdoors**
- **Locations subject to direct sunlight or close to a heater**
  Install the instrument in a location with stable temperatures that remain close to an average temperature of 23°C. Do not mount it in locations subject to direct sunlight or close to a heater. Doing so adversely affects the internal unit.
- **Locations with substantial amounts of oily fumes, steam, dust, or corrosive gases**
  The presence of oily fumes, steam, dust, or corrosive gases adversely affects the instrument. Do not mount the instrument in locations subject to any of these substances.
- **Areas near electromagnetic field generating sources**
  Do not place magnets or tools that generate magnetism near the instrument. If the instrument is used in locations close to a strong electromagnetic field generating source, the magnetic field may cause measurement errors.
- **Locations where the display is difficult to see**
  The instrument uses an LCD for the display unit, and this can be difficult to see from extremely oblique angles. Mount the instrument in a location where it can be seen as much as possible from the front.
- **Areas close to flammable articles**
  Absolutely do not place the instrument directly on flammable surfaces. If such a circumstance is unavoidable and the instrument must be placed close to a flammable item, provide a shield for it made of 1.43 mm thick plated steel or 1.6 mm thick unplated steel with a space of at least 150 mm between it and the instrument on the top, bottom and sides.
- **Areas subject to being splashed with water**

Mounting Method

Mounting the Instrument Main Unit

Provide an instrumented panel steel sheet of 2.3 to 25 mm thickness.

(1) For mounting single unit

1. Using a screwdriver, loosen the screws of the two provided metal clamps in advance.
2. Insert the main unit of the instrument from the front side of the instrumented panel.
3. Install one of the metal clamps on top of the main unit and tighten the screw into the rear face of the panel. Repeat the procedure with the second clamp at the bottom of the unit.

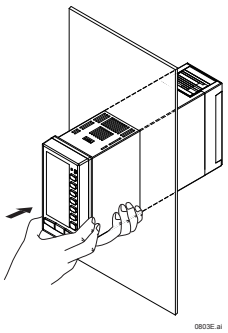


Figure 8.1

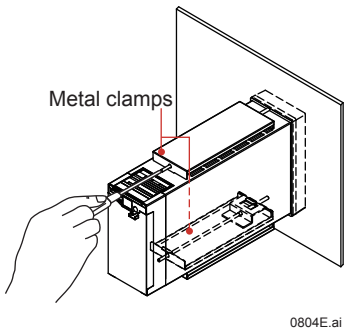


Figure 8.2

To remove the instrument from the panel, reverse the above procedure.

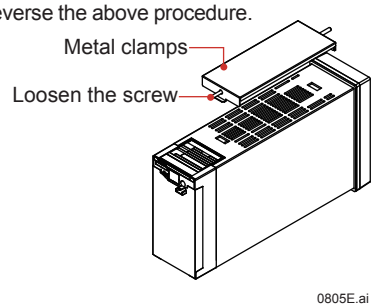


Figure 8.3

- Tighten the screws with appropriate tightening torque within 0.3 - 0.6N•m. Otherwise it may cause the case deformation or the bracket damage.
- Ensure that neither tools nor foreign matter enter the inside of the instrument through the holes for fitting the metal clamps.

(2) For mounting units side-by-side

1. According to the arrangement order, mount the other main units side by side in the panel, keeping them in close contact with each other.
2. Mount the individual controllers as above in item (1).

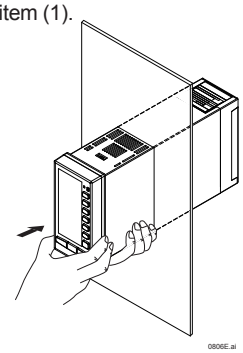
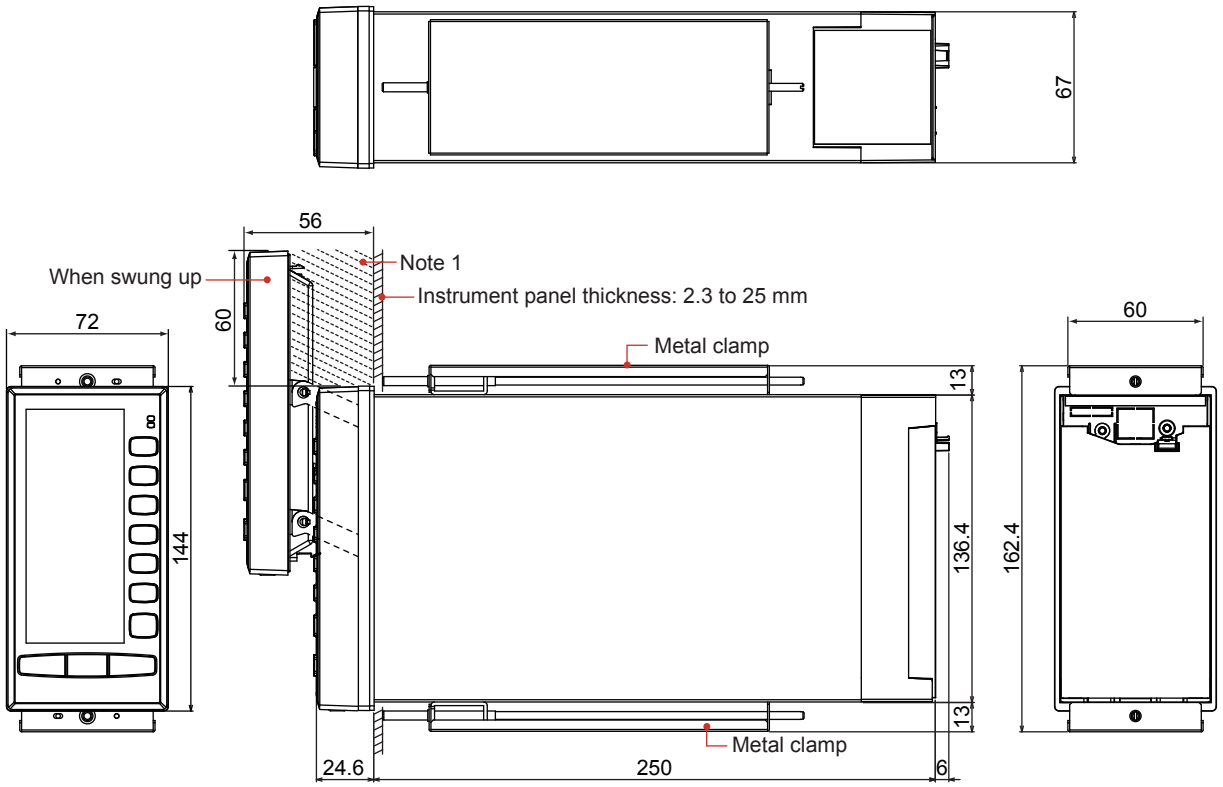


Figure 8.4

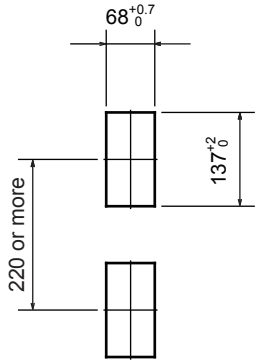
External Dimensions/Panel Cutout Dimensions



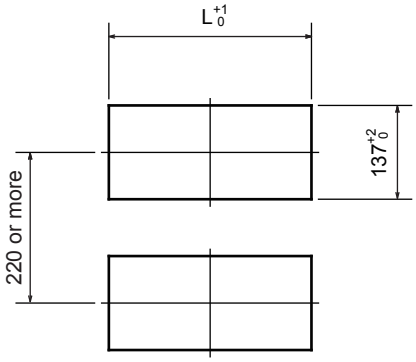
Weight: 1.6 kg (Basic type)

Pane Cutout Dimensions

For single mounting:



For side-by-side mounting:



Panel Cutout Width for Side-by-side Mounting

Number of instruments to be mounted	L(mm)
2	140
3	212
4	284
5	356
6	428
7	500
8	572
9	644
10	716
11	788
12	860
13	932
14	1004

Trigonometry
Unit: mm
General tolerance = ±(value of tolerance class IT18 based on JIS B 0401-1998) / 2

Note 1: If a nameplate, etc. is installed within 60 mm above the instrument, the thickness of the nameplate, etc. must be 30 mm or less from the panel surface.
Note 2: To ensure good air ventilation, allow space of 100 mm or more at the top and bottom of the panel.

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Figure 8.5

Wiring

Wiring Precautions

WARNING

1) Be sure to turn OFF the power supply before wiring to avoid an electric shock.
   Use a tester or similar device to ensure that no power is being supplied to a cable to be connected.
2) As a safety measure, always install a circuit breaker (an IEC 60947-compatible product, 5 A, 100 V or 220 V AC) in an easily accessible location near the instrument. Moreover, provide indication that the switch is a device for turning off the power to the instrument.
3) Wiring work must be carried out by a person with basic electrical knowledge and practical experience.

WARNING

For products with optional code /FM or /CSA:
1) Devices must be wired by professionally trained personnel.
2) In case of option code /FM, install devices according to NEC (National Electrical Code: ANSI/NFPA-70).
   In case of option code /CSA, install devices according to CEC(Canadian Electric Code:C22. 1-06).

CAUTION

1) Provide electricity from a single-phase power supply. If the power is noisy, install an isolation transformer on the primary side, and use a line filter (recommended product: ZAC2205-00U, TDK) on the secondary side. When measures against noise are taken, do not install the primary and secondary power cables close to each other.
2) For thermocouple inputs, wire the thermocouple using shielded compensating lead wire. Moreover, for RTD input, use shielded wires with low conducting resistance and no resistance difference between the three wires.
3) If there is a risk of external lightning surges, use a lightning arrester, etc.

Note

Please wire from the central terminals.

Terminal Diagrams of YS1350

Note: Do not use unassigned terminals as relay terminals.

Digital Inputs and Outputs

High limit alarm output
DO1
28 (+) 29 (-)

Low limit alarm output
DO2
30 (+) 31 (-)

C/M status output
DO4
34 (+) 35 (-)

If the terminals concerned are used as digital output, an external power supply is required.

► For digital output wiring: see "Wiring for Digital Input/Output and FAIL Output" described later.

LCD backlight off input
DI2
With voltage
36 (+) 37 (-)
<Factory default> No function

Operation mode switching input
DI1
With voltage
38 (+) 39 (-)
<Factory default> No function

Analog Outputs

Setpoint value output
Y2
Voltage output (1-5 V DC)
24 (+) 25 (-)

(Optional code /A34) Ethernet Communication

10BASE-T/100BASE-TX
RJ45 connector

Active LED (left side)	
Color	Contents
OFF	Stopped
Orange	Half-duplex
Green	Full duplex
Link LED (right side)	
Color	Contents
OFF	Stopped
Orange	10 Mbps
Green	100 Mbps

Analog Inputs

Measurement input 1
X1
1 (+) 2 (-) Voltage input (1-5 V DC)

Cascade input
X2
3 (+) 4 (-) Voltage input (1-5 V DC)

(For optional code /A0☐) Direct Input Signal Output

9 (+) 10 (-) Voltage input (1-5 V DC)

► For direct input connection: see "Direct Input Wiring" described later.

FAIL Output

ON in normal condition
11 (+) 12 (-)

FAIL output requires external power supply.

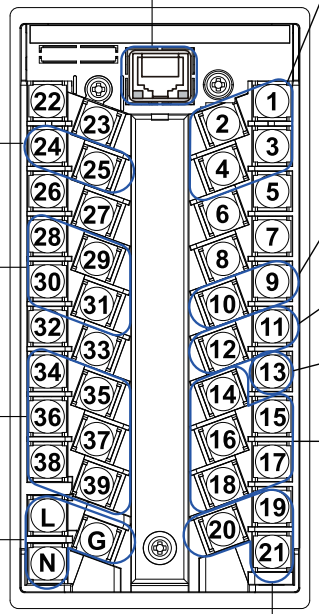
► For FAIL output wiring: see " Wiring for Digital Input/Output and FAIL Output" described later.

Connection of Transmitter Supply Power

Measurement input 1
1 (+) 2 (-) 250Ω 3W
24 V DC supply voltage
13 (+) (-)

The figure above shows an example of the wiring for analog input 1. Analog input 2 can also be connected in the same way.

► For connecting two transmitters: see " Transmitter Supply Power Wiring" described later.

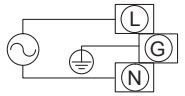
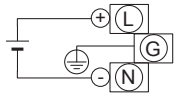


Digital input hardware specifications:
When voltage is present
ON: −0.5 to 1 V DC OFF: 4.5 to 30 V DC
For no voltage
ON: resistance of 200 Ω or less
OFF: resistance of 100 kΩ or more
Input contact rating: 5 V DC, 20 mA or more

Digital output hardware specifications:
Rating 30 V DC
200 mA or less (resistive load)

Digital input function can be set using DI1F, DI2F engineering parameters.

Power Supply

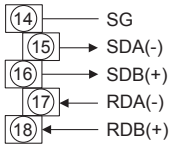
Supply voltage (AC)	Supply voltage (DC)
	

Supply voltage(AC): 100 to 120 V AC (±10%), 50/60 Hz (±3 Hz)
(100 V AC, 24 V DC common power)
220 to 240 V AC (±10%), 50/60 Hz (±3 Hz)
(220 V AC power)
Supply voltage(DC): 24 to 120V DC (±10%)
(100 V AC, 24 V DC common power)
135 to 190 V DC (±10%) (220 V AC power)

DC power supply can be connected without polarity.

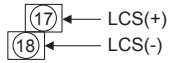
RS-485 Communication

(Optional code /A31)



DCS-LCS Communication

(Optional code /A32)



Direct Input Terminals

(Optional specifications)

► For direct input connection: see “Direct Input Wiring” described later.

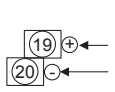
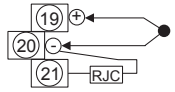
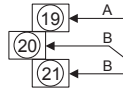
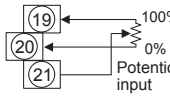
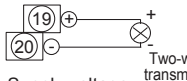
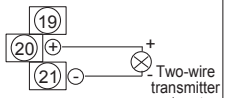
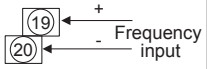
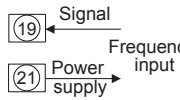
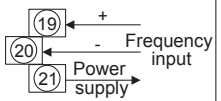
mV input (optional code /A01) Isolator (optional code /A05)	Thermocouple input (optional code /A02)	RTD input (optional code /A03)
		
mV input (/A01) or 1-5V DC (/A05)	TC input Mount the RJC at the terminal 21 side.	RTD input Match the wiring resistances of terminals 19 and 21 with each other.
Potentiometer input (optional code /A04)	**Two-wire transmitter input (optional code /A06, /A07)**	**Two-wire transmitter input (optional code /A06, /A07)**
		
100% 0% Potentiometer input Match the wiring resistances of terminals 19 and 20 with each other.	Supply voltage required Two-wire transmitter input	Two-wire transmitter input Case of 4 to 20 mA signal not requiring supply power
Frequency input (optional code /A08)		
Two-wire type (voltage, contact)	**Power feed type, two-wired**	**Power feed type, three-wired**
		
Frequency input	Signal Frequency input Power supply	Frequency input Power supply

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Figure 8.6

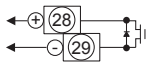
Terminal Diagrams of YS1360

Note: Do not use unassigned terminals as relay terminals.

Digital Inputs and Outputs

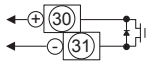
High limit alarm output

DO1



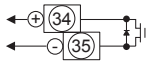
Low limit alarm output

DO2



C/M status output

DO4

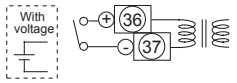


If the terminals concerned are used as digital output, an external power supply is required.

► For digital output wiring: see "Wiring for Digital Input/Output and FAIL Output" described later.

LCD backlight off input

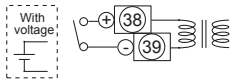
DI2



<Factory default> No function

Operation mode switching input

DI1



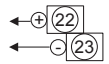
<Factory default> No function

Analog Outputs

Manipulated output variable 1

Y1

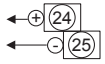
Current output (4-20 mA DC)



Manipulated output variable 2

Y2

Voltage output (1-5 V DC)



(Optional code /A34)

Ethernet Communication

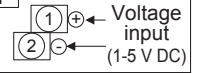
10BASE-T/100BASE-TX
RJ45 connector

Active LED (left side)	
Color	Contents
OFF	Stopped
Orange	Half-duplex
Green	Full duplex
Link LED (right side)	
Color	Contents
OFF	Stopped
Orange	10 Mbps
Green	100 Mbps

Analog Inputs

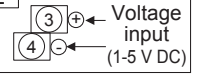
Measurement input 1

X1



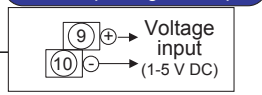
Cascade input

X2



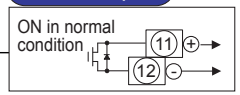
(For optional code /A0☐)

Direct Input Signal Output



► For direct input connection: see "Direct Input Wiring" described later.

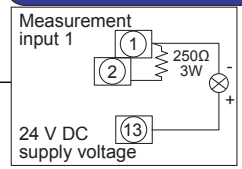
FAIL Output



FAIL output requires external power supply.

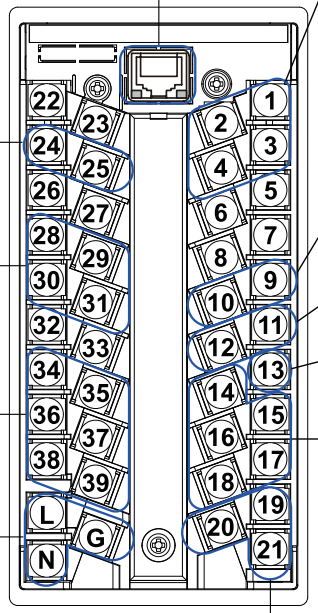
► For FAIL output wiring: see " Wiring for Digital Input/Output and FAIL Output" described later.

Connection of Transmitter Supply Power



The figure above shows an example of the wiring for analog input 1. Analog input 2 can also be connected in the same way.

► For connecting two transmitters: see " Transmitter Supply Power Wiring" described later.

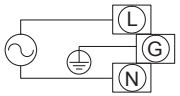
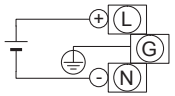


Digital input hardware specifications:
When voltage is present
ON: −0.5 to 1 V DC OFF: 4.5 to 30 V DC
For no voltage
ON: resistance of 200 Ω or less
OFF: resistance of 100 kΩ or more
Input contact rating: 5 V DC, 20 mA or more

Digital output hardware specifications:
Rating 30 V DC
200 mA or less (resistive load)

Digital input function can be set using DI1F, DI2F engineering parameters.

Power Supply

Supply voltage (AC)	Supply voltage (DC)
	

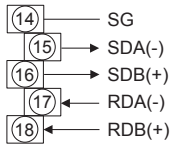
Supply voltage(AC): 100 to 120 V AC (±10%), 50/60 Hz (±3 Hz)
(100 V AC, 24 V DC common power)
220 to 240 V AC (±10%), 50/60 Hz (±3 Hz)
(220 V AC power)

Supply voltage(DC): 24 to 120V DC (±10%)
(100 V AC, 24 V DC common power)
135 to 190 V DC (±10%) (220 V AC power)

DC power supply can be connected without polarity.

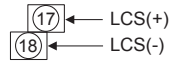
RS-485 Communication

(Optional code /A31)



DCS-LCS Communication

(Optional code /A32)



Direct Input Terminals

(Optional specifications)

► For direct input connection: see “Direct Input Wiring” described later.

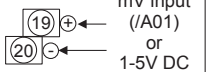
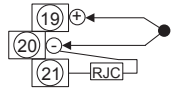
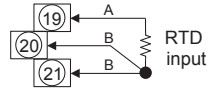
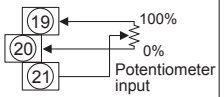
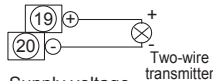
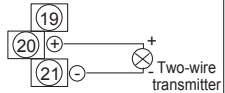
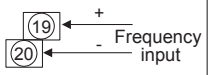
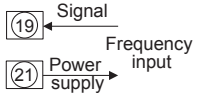
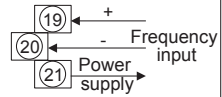
mV input (optional code /A01) Isolator (optional code /A05)	Thermocouple input (optional code /A02)	RTD input (optional code /A03)
 mV input (/A01) or 1-5V DC (/A05)	 TC input; Mount the RJC at the terminal 21 side.	 RTD input; Match the wiring resistances of terminals 19 and 21 with each other.
Potentiometer input (optional code /A04)	**Two-wire transmitter input (optional code /A06, /A07)**	**Two-wire transmitter input (optional code /A06, /A07)**
 100% 0% Potentiometer input; Match the wiring resistances of terminals 19 and 20 with each other.	 Two-wire transmitter input; Supply voltage required	 Two-wire transmitter input; Case of 4 to 20 mA signal not requiring supply power
Frequency input (optional code /A08)		
Two-wire type (voltage, contact)	**Power feed type, two-wired**	**Power feed type, three-wired**
 Frequency input	 Signal; Frequency input; Power supply	 Frequency input; Power supply

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Figure 8.7

Installation and Wiring

Transmitter Supply Power Wiring

If the YS1000 is connected to a two-wire transmitter, it is recommended that the field signal be isolated to limit the effects of short circuiting or ground fault incidents within a narrow range. (Use an external distributor.)
However, for economical connection to a two-wire transmitter, the YS1000 is equipped with non-isolated power terminals for transmitters (25 to 25.5 V DC).

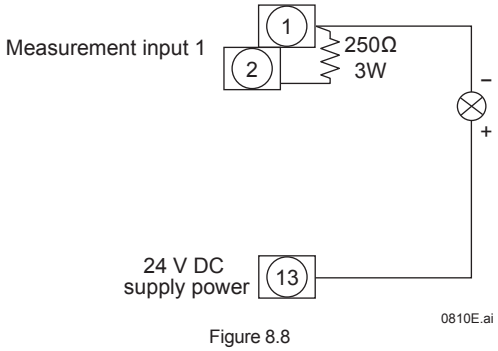


Figure 8.8

Supply current

When optional specification direct input (/A0☐) is provided: 25 to 25.5 V DC, 30 mA
When no optional specification direct input (/A0☐) is provided: 25 to 25.5 V DC, 60 mA (two two-wire transmitters can be connected)

Wiring for Digital Input/Output and FAIL Output

WARNING

For products with optional code /FM or /CSA:
Install explosion-proof wiring defined in the relevant country for the following signal wiring.

- The digital output cable must be wired from the non-hazardous area by using Class I, Division 2 wiring dedicated in potentially explosive atmospheres such as a threaded metal conduit. In addition, it is necessary to be wired not to apply stress at the end of the cable.

External no-voltage and voltage contacts for digital inputs should be provided so that the rated value is obtained. Attention must be paid to excessive conductor resistance and in-conductor voltage drop.

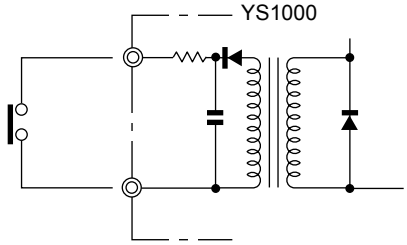


Figure 8.9 Connection of Digital Input (No-voltage Contact)

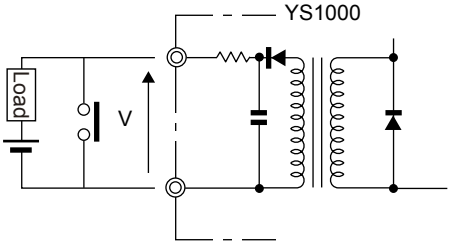


Figure 8.10 Connection of Digital Input (Voltage Contact)

When driving an external device using contact outputs such as alarm output, status output, and FAIL output, install wiring paying attention to the following:

CAUTION

- Do not connect loads exceeding the contact rating.
- To drive equipment incorporating inductance components such as relays, always connect a protective diode (surge absorber) in parallel with the load.
- To connect a power supply for driving a load, the power supply's polarity must be matched with that of the contact output. Connecting it in reverse may result in failure.
- An AC load cannot be directly opened or closed using contact output. In this case, provide a repeating relay, etc.

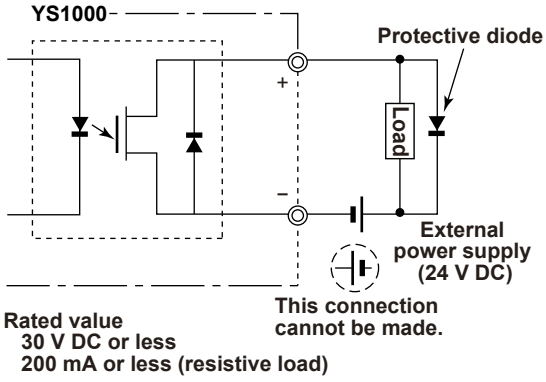


Figure 8.11 Connection Using Digital Output

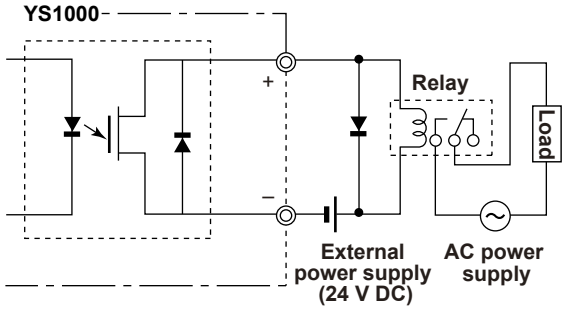


Figure 8.12 Connection of Digital Output to Drive a Load Including AC Power Supply

Direct Input Wiring (Optional Code /A0☐)

Direct input terminals allow the connection of one of the following: mV voltage, thermocouple, RTD, potentiometer, isolator, two-wire transmitter, or a pulse signal.

A sensor signal is connected to the direct input terminals, converted into a 1–5 V signal by a signal converter circuit, and then output to the direct input signal output terminals. Connect this signal to the terminals you wish to input to using external wiring.

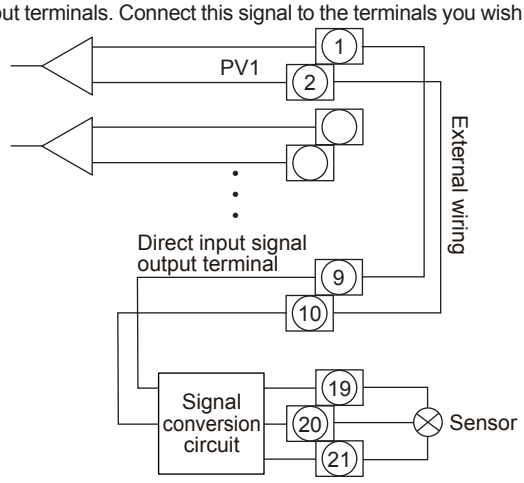
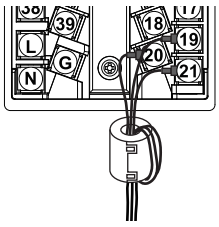


Figure 8.13

A ferrite core is included when the optional code/A0☐ is specified.

Be sure to use the ferrite core when connecting to the wire to the direct input terminals.



CAUTION

If there is any risk of a surge due to lightning discharge, an arrester should be connected to the direct input signal line. YOKOGAWA AR series is recommended for the arrester.

Wiring for the Serial Communication Interface (Optional Code /A31)

To perform Modbus communication, PC-link communication, or YS protocol Communication connect the wires as shown below.
To perform YS protocol communicaiton with DCS, connect the wires as a four-wire type shown below.
If the instrument is located at the end of the wiring, turn ON the terminating resistor. The terminating resistance (internal) can be set using the RS-485 communication terminating resistor ON/OFF (TRMR) engineering parameter.

Note

Even if the terminating resistor is being ON, it will be OFF when the power supply of the instrument is turned off.

► For details of communication parameter setting and communication functions: see YS1000 Series Communication Interface User's Manual

Four-wire connection

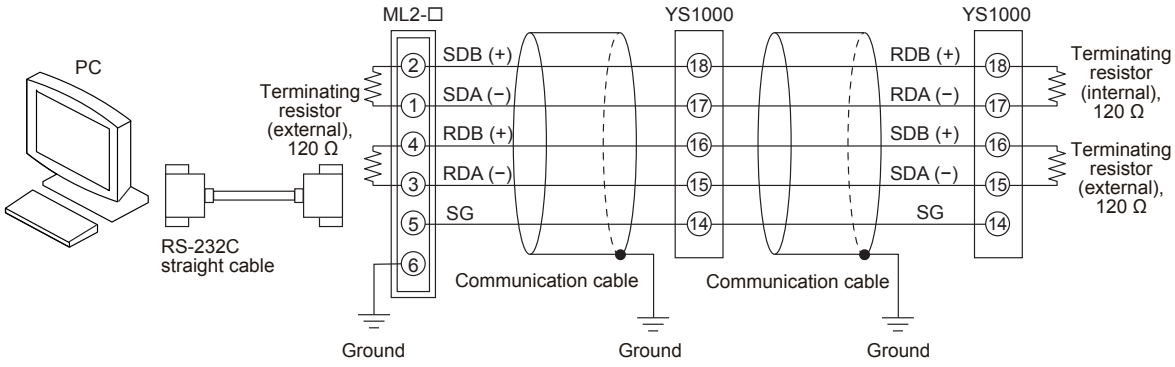


Figure 8.14

Two-wire connection

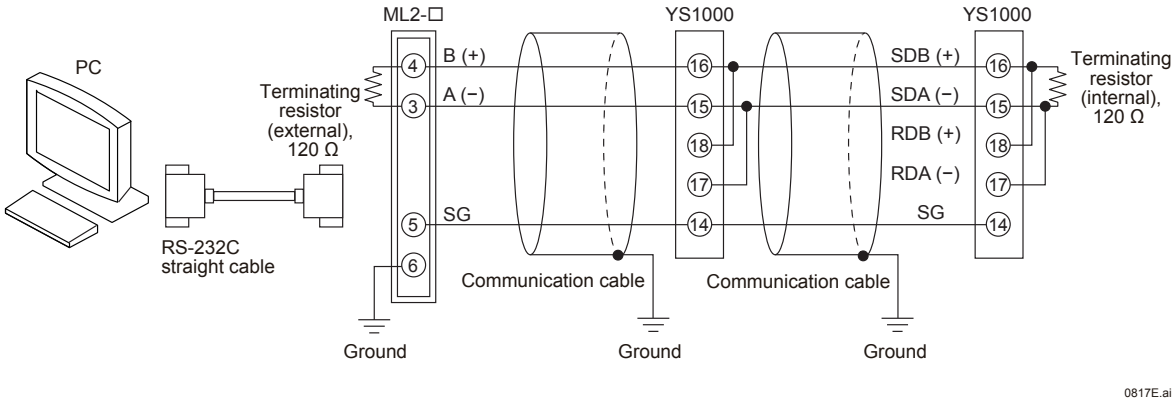


Figure 8.15

Note

ML2-☐ is a YOKOGAWA converter. RS-232C/RS-485 converters other than these devices can also be used. In such a case, check the electric specifications of each converter, etc. before using them.

Wiring for Distributed Control System (DCS-LCS) Communication (Optional Code /A32)

The following shows a diagram of the wiring between YS1000 and an SCIU communication interface unit.
For the wiring between the DCS and an SCIU, and for the number of units to be connected, see the respective user's manuals.

► For details of communication parameter setting and communication functions: see YS1000 Series Communication Interface User's Manual

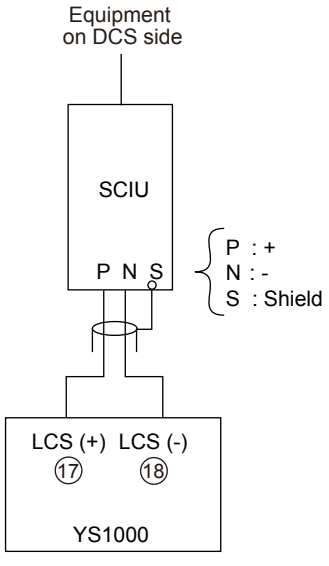
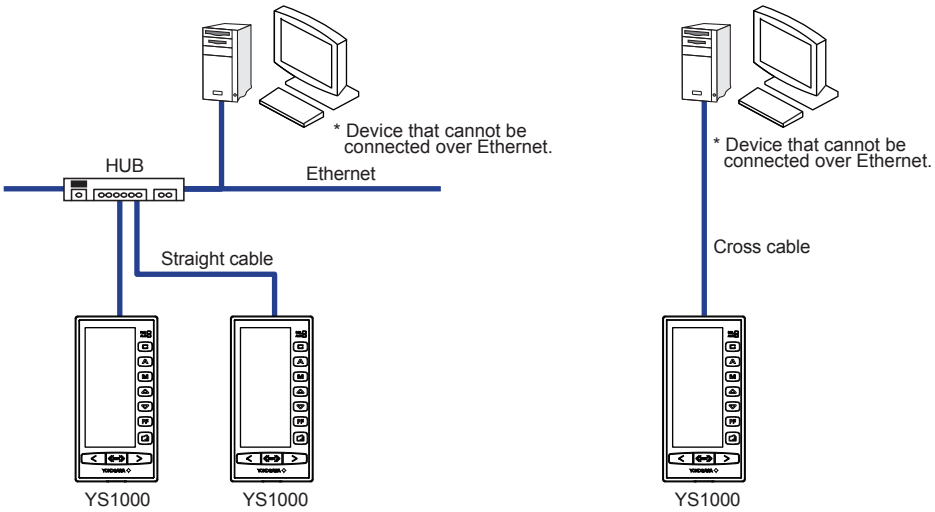


Figure 8.16

Wiring for the Ethernet Communication Interface (Optional Code /A34)



CAUTION

If there is any risk of a surge due to lightning discharge, an arrester for Ethernet (100 BASE-TX/10 BASE-T) should be connected.

Wiring for Power Supply and Grounding

Power supply wiring

WARNING

Be sure to turn OFF the power supply before wiring.
Use a tester or similar device to ensure that no power is being supplied to a cable to be connected.
Install the power cable keeping a distance of more than 1 cm from other signal wires.
The power cable is required to meet the IEC standards concerned or the requirements of the area in which the instrument is being installed.

For products with optional code /FM or /CSA:

- When devices are installed in a hazardous area in Class I, Division 2, wire a power supply cable from a non-hazardous area by explosion-proof wiring (including metal conduit wiring).
- In case of option code /FM, install devices according to NEC (National Electrical Code: ANSI/NFPA-70).
  In case of option code /CSA, install devices according to CEC(Canadian Electric Code:C22. 1-06).

Ground wiring

WARNING

The YS1000 should always be grounded to protect the operator and maintenance personnel from electric shock and to prevent the effects of external noise. Ground wiring should be grounded to Ground (minimum resistance).

WARNING

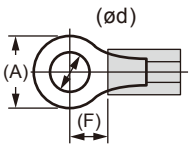
After completion of power cable wiring and ground wiring, always install the terminal cover to the instrument.

Note

If there are multiple YS1000s on the same panel and individual grounding cannot be provided, determine the location of a grounding bus lead-in at one location and use and connect grounding cables of 2 mm^2 or more from each YS1000 to the grounding bus.

Crimping terminal recommendations

Ring tongue terminal



Applicable terminals	Applicable wire mm^2 (AWG#)	ød (mm)	A (mm)	F (mm)	Applicable cable
M4	1.04-2.63 (16-14)	4.4 max.	7.0 max.	7.8 max.	Grounding cable
	0.25-1.65 (22-16)	4.4 max	6.6 max	6.7 max	Power supply cable Signal cable

Recommended tightening torque: 1.2 N•m
Applicable wire size: Grounding cable 2 mm^2 or more, Power supply cable 1.25mm^2 or more

Installing the Terminal Cover

After completing the wiring, be sure to install the terminal cover to the instrument for safety and dust proofing.

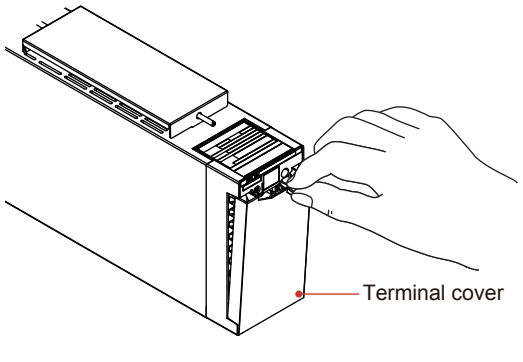


Figure 8.17

Troubleshooting

How to Take Actions if the ALM Lamp or FAIL Lamp Lights up

In detecting an abnormality, YS1000 lights up the lamps (FAIL, ALM) at the upper part of the instrument's front panel.

- FAIL lamp (red): Lights up if a major failure occurs in which the Manual Setter cannot operate.
- ALM lamp (yellow): Lights up if a minor abnormality occurs in which the Manual Setter can still continue to operate.

Actions to be Taken if the ALM Lamp Lights Up

- If the ALM lamp lights up, the alarm item can be checked on the ALARM Display.
- Alarm types include process alarms, and system alarms.
- A process alarm that has occurred prior to a power failure will be stored in the memory and will be re-displayed upon a HOT start. (Even if the power supply is turned off while in the condition that an alarm occurred in the ALM lamp lights up again at HOT start. In this case, set the instrument once to COLD start and turn ON the power supply. This will clear the alarm indication.)

Table 9.1 List of Causes of Alarm Occurrence

Type	Alarm Display	Description	Cause of Alarm Occurrence and Diagnosis	Actions and Others
System alarm	X1, X2	Input overrange	Input value is less than −6.3% or greater than +106.3%.	The operation mode (C, M) does not change in the event of alarm occurrence. Check wiring and instruments connected.
	Y1	Current output connection open or output read-back error*.	Output 1 (Y1) output connection is open or output read-back value error*.	Check wiring and instruments connected or Remove the noise of wiring.
	COMM	RS-485 communication error	Framing parity error Buffer overflow Character-to-character timeout Error detection (checksum, CRC, LRC)	Check communication connection (wiring and communication conditions).
		DCS-LCS communication error	Framing parity error Buffer overflow Header receiving data error Framing parity error Error detection (BCC) Communication undetected Communication time exceeded Communication status error	Check communication connection (wiring and communication conditions). Check connection destination.
	ETHER	Ethernet communication error	No response from Ethernet communication device	Failure (Contact YOKOGAWA's sales office or sales representative.)
	DATA	Writing from YSS1000 incomplete	Data write from YSS1000 has not been completed.	Re-download data from YSS1000.
	CALR	Adjustment inspection error		Contact YOKOGAWA's sales office or sales representative.
Process alarm	PH1	High limit alarm for PV	Process abnormality PV1 or PV2 is at or above the high limit alarm setpoint.	Recover the process to normal conditions.
	PL1	Low limit alarm for PV	Process abnormality PV1 or PV2 is at or below the low limit alarm setpoint.	

* An output read-back error is when SCOCD is set to ALARM (1). (Please see P.48)

Actions to be Taken in the Event of the FAIL Lamp Lighting Up

If the FAIL lamp lights up, the FAIL Display appears. (If both the main processor (MCU) and display processor (DCU) fail or if the gate array (GA) is faulty, the FAIL lamp does not light up.)

Table 9.2 List of Causes of Failure

FAIL Display	Description	Processing (Action to be Taken in the Event of Abnormality)	
None	Main clock stopped or both the main processor and display processor are defective.	Computation stopped	• FAIL contact open • Output HOLD (DO1, DO2, DO4) • Communication (RS-485, DCS-LCS, or Ethernet) stopped
SCLK	Sub-clock stopped		
MCU	Main processor (MCU) faulty		
DCU	Display processor (DCU) faulty		
A/D	A/D converter faulty		
D/A	D/A converter faulty		
RAM	MCU-RAM faulty		
ROM	MCU-ROM faulty		
FRAM	FRAM faulty		
FLASH	Flash memory faulty		
OPT	Communication abnormal		
SYS	System data abnormal		
EMPFR	FRAM data non-initialized, FRAM data lost		
EMPFL	Flash data non-initialized, Flash data lost		

Displays and Operation in the Event of FAIL

YS1000 has an independent computation circuit (main processor, MCU), a display operation circuit (display processor, DCU).

If the computation circuit fails, control computation stops, and outputs (DO1, DO2, DO4) are changed to held status. The communication function also stops. In this case, the FAIL Display is shown by the display operation circuit. This circuit measures and displays analog input data (X1). The display cannot be switched.

If the display operation circuit fails, both normal display and operation are disabled, thereby causing control computation to be stopped and outputs (Y1, Y2, DO1, DO2) to change to held status. The communication function also stops. In this case, the FAIL Display is shown by the computation circuit. This circuit measures and displays analog input data (X1), and the current output signal (Y1) can be manipulated by MV operation keys. The display cannot be switched.
For YS1360, regardless of the occurrence of a failure, the front panel of the instrument can be swung up to operate a current output signal (Y1) using the hard manual operation wheel (when the instrument is equipped with the hard manual unit (i.e. with the designation of suffix code -1□□)).

Display Provided in the Event of FAIL

If both the main processor (MCU) and display processor (DCU) fail or if the gate array (GA) is faulty, no display is provided.

WARNING

If the FAIL lamp lights up and the LCD display does not function, the MV operation keys are available even if both the main processor (MCU) and display processor (DCU) are faulty. However, do not manipulate MV because MV display is invisible.

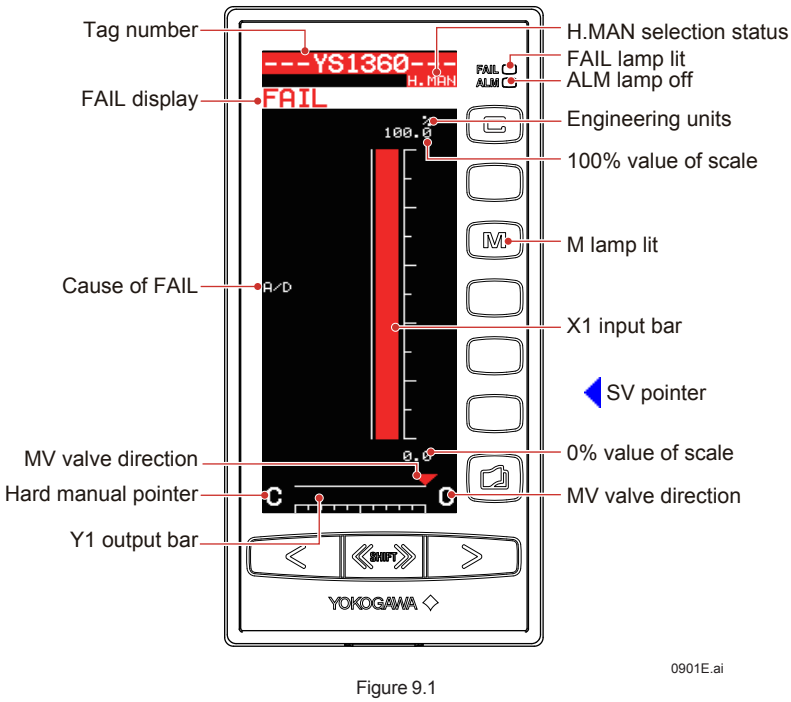


Figure 9.1

Table 9.3

Item Names in Figure	Description
X1 input bar	1 to 5 V DC of analog input (X1) is displayed in a range of 0 to 100%.
Y1 output bar	Y1 output value is displayed (if FAIL lights up, the value displayed is the manipulated output variable 1 produced immediately before the occurrence of the failure)
Hard manual pointer (YS1360)	Displayed being linked with the hard manual output value (this pointer is not displayed if suffix code -2□□ was specified.)
H.MAN selection status (YS1360)	Displayed if the hard manual unit has been selected (this indication is not displayed if suffix code -2□□ was specified.)
FAIL cause	The cause of failure is displayed. If there are multiple failures, multiple causes of failures are displayed. No indication is displayed if the cause of failure is unknown.
FAIL and ALM lamp	FAIL lamp lights up and the ALM lamp is off
SV pointer (YS1350)	The pointer indicates the SV value set immediately before FAIL was displayed.
Tag number	The tag number shown immediately before FAIL was displayed.
MV valve direction (YS1360)	C-O or O-C indicated immediately before FAIL was displayed.
Scale	0 to 100% unconditionally. Divisions are used that were indicated immediately before FAIL was displayed.
C, M lamps	M lamp lights up.
PH and PL pointers	Not displayed
PV, SV, and MV digital display	Not displayed
Key entry	All invalid with the exception of the MV operation keys (<, SHIFT, >)

Selecting the action to take in the event of an error in the circuit diagnosis of current output.

Description

The SCOCD parameter is enabled when using Y1 terminal is 4-20 mA (0)).
This parameter can be used to select D/A FAIL or OOP ALARM for displaying the diagnostic result in the event of an error with the D/A conversion section and read-back value. Note that selecting OFF (2) does not perform diagnosis.

Setting Display

Parameters	Names	Setting Range	Factory Default	Display
SCOCD	Selection of Current Output Circuit Diagnosis	FAIL: D/A FALL in the event of an error ALARM: OOP ALARM in the event of an error OFF: No diagnosis	ALARM	Engineering Menu Display > [CONFIG1] (Configuration Display 1)

Note

• How to use the Selection of Current Output Circuit Diagnosis (SCOCD)

When SCOCD is in ALARM (1) (default value):

If an error is detected in the current output read-back value, OOP ALARM is issued and control is continued. In the event of a breakdown of the current output circuit, control is also continued. In this case, a breakdown of the current output circuit should be judged based on the fact that proper control can no longer be performed or another system alarm or process alarm has been issued.

When SCOCD is in FAIL (0):

If a breakdown of the current output circuit or an error in the current output read-back value is detected, D/A FAIL is set and control is stopped.

When SCOCD is in OFF (2):

No D/A FAIL or OPP ALARM detection is performed, but control is continued. In the event of a breakdown of the current output circuit, control is also continued. In this case, a breakdown of the current output circuit should be judged based on the fact that proper control can no longer be performed or another system alarm or process alarm is issued.

• Diagnosis of the current output circuit

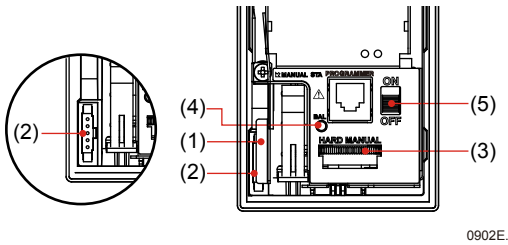
In current output circuit diagnosis, the current output value of the Y1 terminal is read back to within the YS1000 to detect an error from a difference between the output value and read-back value.
There are cases where the read-back value does not agree with the output value temporarily due to the characteristics of a positioner, etc. connected to the Y1 terminal or noise superimposed by the wiring condition, which results in the judgment that there is an error in the D/A conversion section.
However, temporary noise of this kind or low-level noise may not affect control and control may be continued normally.
If an error occurs in the D/A conversion section, the cause may be one of the following three. Take action according to each cause.

	Possible Cause	Actions
(1)	Breakdown of the current output circuit	In this case, control is disabled from being continued. The current output circuit has failed; contact us for repair.
(2)	A break in wire of Y1 terminal	A wire of the Y1 terminal has broken; check the wiring. This error may also occur if a terminal wire is disconnected during maintenance, transient work, etc.
(3)	Noise on Y1 terminal	If control is affected, eliminate noise.
		If control is normal, control can be continued as is. This presents no problem.

Backup Operation in the Event of Instrument Failure

Hard manual unit operation (except in cases when suffix code -2☐☐ was specified)

Swinging up the front panel allows you to see the control section of the hard manual unit for backup (a manual operation output section consisting of analog circuits) on the internal panel.
If YS1000 is in FAIL status and there is an urgent demand situation, set the manipulated output variable (Y1 output) to the safe side using hard manual operation.



Hard Manual Operation Section

Figure 9.2

Note: Before you connect the cable to the YS110 connector, touch the metal lever to discharge static electricity.

(1) Metal lever
(2) YS110 standby manual station connection connector (MANUAL STA)
(3) Hard manual operation wheel (HARD MANUAL)
(4) MV balance lamp (BAL)
(5) Hard manual selector switch (ON/OFF)

- Adjust the value output by the hard manual circuit using the hard manual operation wheel to match it to the Y1 output value (the control computation circuit's manipulated output variable) produced immediately before FAIL was displayed. The output value increases when the operation wheel is turned clockwise, while it decreases when turned counterclockwise.
- When the hard manual circuit output value agrees with the Y1 output value, the MV balance lamp (BAL: green) lights up.
- When the hard manual selector switch is turned ON, the Y1 output value is shifted from the control computation circuit to the hard manual circuit while the Y1 output value continues to be generated. After that, output operation is available using the hard manual operation wheel.

Note

The hard manual unit is only available for Y1 output operation.

Online Controller Replacement

WARNING

Do not remove the internal unit from the instrument case. Contact YOKOGAWA's sales office or sales representative when replacing the internal unit, as safety standard inspection is required.

WARNING

Explosion hazard.
Do not remove or insert the internal unit or do not connect the YS110 in explosive atmospheres.

CAUTION

Products with optional code /FM or /CSA cannot satisfy the explosion protection standards if the internal unit is removed.

Use of the standby manual station allows the controller to be replaced without interrupting Y1 output in the event of internal unit failure, etc.

► For YS110 standby manual station: see YS110 Standby Manual Station User's Manual.

Recovery Operations after Power Failures

If a power failure occurs that exceeds the power holdup time, the instrument enters power failure status. Operation after a power failure differs depending on the power failure time and on the start mode (START) engineering parameters that have been set. The following action occurs with the factory default values.

► For operation after power failure: see Chapter 6, Processing during Power Failures, in the YS1500 Indicating Controller/YS1700 Programmable Indicating Controller User's Manual (CD-ROM).

- Momentary power interruption of less than 2 seconds
  The instrument continues to operate the same as it had prior to the momentary power interruption.
- Power failure of 2 seconds or more
  The operation mode enters Manual, setpoints (SV) are maintained in the same condition as they were prior to the power failure, and the manipulated output variable becomes −6.3%.

List of Parameters

Understanding the List of Parameters

Parameter:	Symbol displayed on YS1350/YS1360's LCD
Name:	Parameter name
Setting and Display Range:	Range settable on YS1350/YS1360
Unit:	Parameter unit. An oblique line represents that there is no unit.
Factory Default Value:	Factory default values

Display and Setting Conditions: R: Display only, R/W: Display and setting available, N/A: No display

For more information about each parameter, see the YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting User's Manual.

<Tuning Parameters>

Setting Display (SETTING)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
PV1	Process variable 1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1)	Engineering unit	Undefined	R	R	
SV1	Setpoint value 1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1)	Engineering unit	0.0	R/W	N/A	
MV1	Manipulated output variable 1 (Note 2)	-6.3 to 106.3	%	-6.3	N/A	R/W	
CIN1	Cascade input value	YS1350: Equivalent to -6.3 to 106.3% in the engineering unit (Note 1)	Engineering unit	0.0	R	R	
		YS1360: -6.3 to 106.3	%				
PH1	High limit alarm setpoint for PV1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 3)	Engineering unit	106.3	R/W	R/W	
PL1	Low limit alarm setpoint for PV1	Equivalent to -6.3 to 106.3% in the engineering unit (Note 1) (Note 4)	Engineering unit	-6.3	R/W	R/W	
HYS1	Alarm hysteresis 1	Equivalent to 0.0 to 20.0% in the engineering unit (Note 1)	Engineering unit	2.0	R/W	R/W	
MH1	High limit setpoint of MV1	-6.3 to 106.3 (Note 5)	%	106.3	N/A	R/W	
ML1	Low limit setpoint of MV1	-6.3 to 106.3 (Note 5)	%	-6.3	N/A	R/W	
PLC1	Square root extraction low cutoff setpoint for PV1	0.0 to 100.0	%	1.0	R/W	R/W	
PLG1	First order lag time constant for PV1	0.0 to 800.0	s (second)	0.0	R/W	R/W	

Note 1: The engineering units set with the Engineering parameters, SCH1, SCL1, and SCDP1.
Note 2: MV (Manipulated output variable) can be set only with the MV operation key at the bottom of the front panel.
Note 3: Alarm will not occur if set at a maximum value.
Note 4: Alarm will not occur if set at a minimum value.
Note 5: Be sure to set to MH1>ML1.

Input and Output Data Display (I/O Data)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
X1	Analog input 1	-25.0 to 125.0	%	-25.0	R	R	
X2	Analog input 2	-25.0 to 125.0	%	-25.0	R	R	
Y1	Analog output 1	-20.0 to 106.3	%	-20.0	N/A	R	
Y2	Analog output 2	-6.3 to 106.3	%	-6.3	R	R	
DI01	Digital input 1	0, 1		0	R	R	
DI02	Digital input 2	0, 1		0	R	R	
DO01	Digital output 1	0, 1		0	R	R	
DO02	Digital output 2	0, 1		0	R	R	
DO04	Digital output 4	0, 1		0	R	R	

<Engineering Parameters>

Configuration Display 1 (CONFIG1)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	R/W	
CTL	Controller mode selection	SVSTN: Manual Setter for SV Setting		SVSTN	R	N/A	
		MVSTN: Manual Setter for MV Setting		MVSTN	N/A	R	
START	Start mode	AUT: HOT start M-COLD: Power failure duration<2 sec.; HOT Start, Power failure duration≥2 sec.; M-COLD start C-COLD: Power failure duration<2 sec.; HOT Start, Power failure duration≥2 sec.; C-COLD start COLD: Power failure duration<2 sec.; HOT Start, Power failure duration≥2 sec.; COLD start		M-COLD	R/W	R/W	
FDSP	Power-on initial display	LOOP1: LOOP 1 Display, MTR1: METER 1 Display, TRND1: TREND1 Display, TRND3: TREND 3 Display, ALARM: ALARM Display		LOOP1	R/W	R/W	
LOOP1	LOOP 1 Display ON/OFF	OFF, ON (Note 2)		ON	R/W	R/W	
MTR1	METER 1 Display ON/OFF			ON	R/W	R/W	
TRND1	TREND 1 Display ON/OFF			ON	R/W	R/W	
TRND3	TREND 3 Display ON/OFF			ON	R/W	R/W	
ALARM	ALARM Display ON/OFF			ON	R/W	R/W	
CAMLK	Keylock for C/M mode change	UNLOCK, LOCK		UNLOCK	R/W	R/W	
SVLK	Keylock for SV change (YS1350)			UNLOCK	R/W	N/A	
MVLK	Keylock for MV change (YS1360)			UNLOCK	N/A	R/W	
SCOCD	Selection of Current Output Circuit Diagnosis	FAIL: D/A FALL in the event of an error, ALARM: OOP ALARM in the event of an error, OFF: No diagnosis		ALARM	R/W	R/W	
REV	System revision number	Alphanumeric character 8 digits (Style number and Revision number of the product)		Sx.xx	R	R	
MCU	Main CPU version number	Main CPU version number		Rx.xx.xx	R	R	
DCU	Display CPU version number	Display CPU version number		Rx.xx.xx	R	R	
PARA	MCU parameter version number	MCU parameter version number		Rx.xx.xx	R	R	

Note 1: When the SET parameter is set to “ENBL”, [STOP] will appear on the right of the display title, and the manipulated output and alarm output will be kept.

Note 2: Loop1 is always displayed even if you set “OFF” for all lines. When you do not use TRND3, set it to “OFF”.

Configuration Display 2 (CONFIG2)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	R/W	
CMOD1	C-mode 1	-: None, CAS: Analog cascade setting mode, CMP: Computer cascade setting mode		-	R/W	R/W	
PV1IN	PV1 input specification	-: Not use X1: Use PV1		X1	R/W	R/W	
VDIR1	Valve direction 1	C-O: MV 0%=Close, 100%=Open, O-C: MV 0%=Open, 100%=Close		C-O	N/A	R/W	
SCH1	100% value of scale 1	-80000 to 80000		1000	R/W	R/W	
SCL1	0% value of scale 1	-80000 to 80000		0	R/W	R/W	
SCDP1	Decimal point position 1	#####, ####.#, ###.##, ##.###, #.####		####.#	R/W	R/W	
SCDV1	Scale division 1	1, 2, 4, 5, 7, 10, 14, 20		10	R/W	R/W	
UNIT1	Engineering unit 1	Alphanumeric character 7 digits		%	R/W	R/W	
TAG1	Tag number 1	Alphanumeric character 12 digits		---YS1350--- ---YS1360---	R/W	R/W	

Note 1: When the SET parameter is set to “ENBL”, [STOP] will appear on the right of the display title, and the manipulated output and alarm output will be kept.

Configuration Display 3 (CONFIG3)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	R/W	
DI1F	DI1 function selection	NONE: No function E-MAN: Switching to Manual mode (status) TR-MAN: Swiching to Manual mode (trigger) TR-CAS: Switching to Cascade mode (trigger) TR-EVT.C: All event OFF		NONE	R/W	R/W	
DI2F	DI2 function selection	NONE: No function TR-MAN: Swiching to Manual mode (trigger) TR-CAS: Switching to Cascade mode (trigger) LCD-OFF: Backlight auto-off TR-EVT.C: All event OFF		NONE	R/W	R/W	
DI1D	DI1 contact type	OPN: Function is available when the contact is open CLS: Function is available when the contact is closed		OPN	R/W	R/W	
DI2D	DI2 contact type			OPN	R/W	R/W	
DO1F	DO1 function selection	NONE: No function PH1: High limit alarm for PV1 OOP: Current output open		PH1		R/W	
DO2F	DO2 function selection	NONE: No function PL1: Low limit alarm for PV1 OOP: Current output open		PL1		R/W	
DO4F	DO4 function selection	NONE: No function CAS: Cascade mode OOP: Current output open		CAS		R/W	
DO1D	DO1 contact type	OPN: When the event occurs, the contact is open CLS: When the event occurs, the contact is closed		OPN	R/W	R/W	
DO2D	DO2 contact type			OPN	R/W	R/W	
DO4D	DO4 contact type			CLS	R/W	R/W	
PSR1	Square root extraction for PV1	OFF, ON		OFF	R/W	R/W	

Note 1: When the SET parameter is set to “ENBL”, [STOP] will appear on the right of the display title, and the manipulated output and alarm output will be kept.

Input Specification Setting Display (SC MAINT)

See Chapter 3, Adjusting of Direct Inputs (Temperature/Resistance/Frequency), in the YS1350 Manual Setter for SV Setting/ YS1360 Manual Setter for MV Setting User's Manual.

Password Setting Display (PASSWORD)

See 2.2.2, Inhibiting/Enabling Parameter Change, in the YS1350 Manual Setter for SV Setting/YS1360 Manual Setter for MV Setting User's Manual.

Setting Display for Operation Display (DISPLAY)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	R/W	
LP1C	LOOP 1 color selection	GREEN, AQUA, PINK, ORANGE		GREEN	R/W	R/W	
BKCL	Background color selection	BLACK, WHITE, BLUE		BLACK	R/W	R/W	
MTMG1	10-exponential scale factor for METER 1 Display	AUTO, 10^-5, 10^-4, 10^-3, 10^-2, 10^-1, 10^0, 10^1, 10^2, 10^3, 10^4, 10^5,		AUTO	R/W	R/W	
TR1PV	PV1 trend ON/OFF for TREND 1 Display	OFF, ON		ON	R/W	R/W	
TR1SV	SV1 trend ON/OFF for TREND 1 Display			ON	R/W	N/A	
TR1MV	MV1 trend ON/OFF for TREND 1 Display			ON	N/A	R/W	
TRDS1	Data selection 1 for TREND 3 Display	(YS1350) OFF: None PV1: Process variable 1 SV1: Setpoint value 1 X1: Analog input 1 X2: Analog input 2 Y2: Analog Output 1 (YS1360) OFF: None PV1: Process Variable 1 MV1: Manipulated output variable 1 X1: Analog input 1 X2: Analog input 2 Y1: Analog output 1 Y2: Analog output 2		PV1	R/W	R/W	
TRDS2	Data selection 2 for TREND 3 Display			YS1350: SV1 YS1360: MV1	R/W	R/W	
TRDS3	Data selection 3 for TREND 3 Display			OFF	R/W	R/W	
TRDS4	Data selection 4 for TREND 3 Display			OFF	R/W	R/W	
TRDT1	TREND 1 Display time span	1M: 1min., 5M: 5min., 10M: 10min., 30M: 30min., 1H: 1hour, 5H: 5hours, 10H: 10hours, 30H: 30hours		1M	R/W	R/W	
TRDT3	TREND 3 Display time span			1M	R/W	R/W	
TR3DV	Scale division for TREND3 Display	1, 2, 4, 5, 7, 10, 14, 20		10	R/W	R/W	
ACTD1	Active color display selection 1	OFF: None, PH1: High limit alarm setpoint for PV1 PL1: Low limit alarm setpoint for PV1 1-ALM: Logical OR of all loop1 alarms		OFF	R/W	R/W	
TAGAL	Color inversion of tag number	OFF, ON		OFF	R/W	R/W	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and the manipulated output and alarm output will be kept.

LCD Setting Display (LCD)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
ECO	LCD backlight auto-off timer	OFF: Timer function OFF, ON: Timer function ON (Off timer: 30 min)		OFF	R/W	R/W	
BRT	LCD brightness adjustment	0 to 5		1	R/W	R/W	

Communication Setting Display (COMM)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	R/W	
COMM	Communication selection	-, RS-485, DCS-LCS		No option:- /A31:RS-485 /A32:DCS-LCS	R	R	
COMWR	Enable/Disable writing via RS-485 communication (Note 2)	INHB: Setting impossible ENBL: Setting possible (Note1)		ENBL	R/W	R/W	
DREG 1	RS-485 communication D register setting for High/ Low level (Note 3)	H-L: High-Low, L-H: Low-High		H-L	R/W	R/W	
PSL	RS-485 Protocol selection (Note 3)	PCL: PC-link communication PCLSUM: PC-link communication (with checksum) MODASC: Modbus communication (ASCII) MODRTU: Modbus communication (RTU) YS: YS protocol		MODRTU	R/W	R/W	
ADRS	RS-485 communication address (Note 3)	1 to 99		1	R/W	R/W	
STBIT	RS-485 stop bit (Note 3)	1 bit, 2 bit		1 bit	R/W	R/W	
PAR	RS-485 parity (Note 3)	NONE, ODD, EVEN		EVEN	R/W	R/W	
DLEN	RS-485 data length (Note 3)	7 bit, 8 bit		8 bit	R/W	R/W	
BPS	RS-485 baud rate (Note 3)	1200, 2400, 4800, 9600, 19200, 38400 (bps)		38400	R/W	R/W	
TRMR	RS-485 communication terminating resistor ON/OFF (Note 3)	OFF, ON		OFF	R/W	R/W	
ETRWR	Enable/Disable writing via Ethernet communication (Note 4)	INHB: Setting impossible ENBL: Setting possible (Note1)		ENBL	R/W	R/W	
DREG 2	Ethernet communication D register setting for High/ Low level (Note 4)	H-L:High-Low, L-H:Low-High		H-L	R/W	R/W	
ECTO	Ethernet communication timeout period	4 to 60	s	60	R/W	R/W	
IPAD1	IP address 1 (Note 4)	0 to 255		192	R/W	R/W	
IPAD2	IP address 2 (Note 4)			168	R/W	R/W	
IPAD3	IP address 3 (Note 4)			1	R/W	R/W	
IPAD4	IP address 4 (Note 4)			1	R/W	R/W	
SM1	Subnet mask 1 (Note 4)	0 to 255		255	R/W	R/W	
SM2	Subnet mask 2 (Note 4)			255	R/W	R/W	
SM3	Subnet mask 3 (Note 4)			255	R/W	R/W	
SM4	Subnet mask 4 (Note 4)			0	R/W	R/W	
DG1	Default gateway1 (Note 4)	0 to 255		0	R/W	R/W	
DG2	Default gateway2 (Note 4)			0	R/W	R/W	
DG3	Default gateway3 (Note 4)			0	R/W	R/W	
DG4	Default gateway4 (Note 4)			0	R/W	R/W	
PORT	Port number (Note 4)	502, 1024 to 65535		502	R/W	R/W	
ESW	Ethernet setting switch (Note 4)	-, ENTRY		-	R/W	R/W	

Note 1: When the SET parameter is set to "ENBL", [STOP] will appear on the right of the display title, and the manipulated output and alarm output will be kept.
Note 2: Available for the option /A31 or /A32.
Note 3: Available for the option /A31.
Note 4: Available for the option /A34.

LCD Maintenance Setting Display (LCD MAINT)

Parameter	Name	Setting and Display Range	Unit	Factory Default Value	Display and Setting Conditions		User Settings
					YS1350	YS1360	
SET	Enable/Disable setting	INHB: Setting impossible ENBL: Setting possible (Note1)		INHB	R/W	R/W	
PWDOR	These parameters are for maintenance. If maintenance is required, contact your nearest YOKOGAWA dealer.						
KEYST							

Note 1: When the SET parameter is set to “ENBL”, [STOP] will appear on the right of the display title, and the manipulated output and alarm output will be kept.

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